



**A Type Catalog of Fossil Invertebrates
(Arthropoda: Hexapoda) in the Yale
Peabody Museum**

Russell D. White

Marine Biological Laboratory /
Woods Hole Oceanographic Institution
Library

JUN 18 1996

(Received 21 September 1994)

Abstract

Type material for 335 nominal species of fossil hexapods are in the Invertebrate Paleontology Collections of Yale University's Peabody Museum of Natural History. Primary types for 236 nominal species include 227 holotypes, 6 neotypes and 6 syntypes (representing three nominal species). Secondary types for 52 nominal species include 4 allotypes and 90 paratypes. Tertiary types for 91 nominal species include 698 hypotypes. Most types are from Elmo (Kansas), Mazon Creek (Illinois), and Florissant (Colorado) and have been described by F.M. Carpenter, T.D.A. Cockerell, Anton Handlirsch and R.J. Tillyard.

Key Words

Type Catalog, Hexapoda, Yale Peabody Museum, Elmo, Mazon Creek, Florissant, F.M. Carpenter, T.D.A. Cockerell, Anton Handlirsch, R.J. Tillyard.

© Copyright 1995 by the Peabody Museum of Natural History, Yale University. All rights reserved. No part of this publication, except brief quotations for scholarly purposes, may be reproduced without written permission of the Director, Peabody Museum of Natural History.

ISBN No. 0-912532-38-6

Introduction

Woods Hole, MA 02543

This is the first in a series of type catalogs of fossil invertebrates and is a product of an ongoing computerization project to improve the accessibility of the type collections. The order of publication of type catalogs will depend on the ease of verification of the type status and taxonomic history of the species in each group.

This catalog lists all known fossil hexapod types in the Invertebrate Paleontology Collections housed in Yale University's Peabody Museum of Natural History. Many of the descriptions of species authored by Robin J. Tillyard indicate dual repositories for the type specimens. Charles Schuchert, who had contracted Tillyard to describe the Elmo insects, reluctantly agreed to an arrangement whereby Tillyard retained the counterparts of individuals for many of the species Tillyard described. In 1934, as Tillyard's health began to fail, Schuchert and Carl O. Dunbar convinced Tillyard that the counterparts should be returned to Yale. Shortly after Tillyard's death in 1937, his wife turned the specimens over to Yale, in accordance with her husband's wishes.

Tillyard, in his series on Kansas Permian Insects (1923-1937) describes many of Sellards' (1909) species from Elmo, Kansas. For many of these species he designates neotypes, but also refers to many specimens as paratypes and syntypes. Unfortunately, Sellards' (1909) type specimens have not been located and Tillyard's references to these types are incorrect.



**A Type Catalog of Fossil Invertebrates
(Arthropoda: Hexapoda) in the Yale
Peabody Museum**

Russell D. White

Marine Biological Laboratory /
Woods Hole Oceanographic Institution
Library

JUN 18 1996

(Received 21 September 1994)

Abstract

Type material for 335 nominal species of fossil hexapods are in the Invertebrate Paleontology Collections of Yale University's Peabody Museum of Natural History. Primary types for 236 nominal species include 227 holotypes, 6 neotypes and 6 syntypes (representing three nominal species). Secondary types for 52 nominal species include 4 allotypes and 90 paratypes. Tertiary types for 91 nominal species include 698 hypotypes. Most types are from Elmo (Kansas), Mazon Creek (Illinois), and Florissant (Colorado) and have been described by F.M. Carpenter, T.D.A. Cockerell, Anton Handlirsch and R.J. Tillyard.

Key Words

Type Catalog, Hexapoda, Yale Peabody Museum, Elmo, Mazon Creek, Florissant. F.M. Carpenter, T.D.A. Cockerell, Anton Handlirsch, R.J. Tillyard.

© Copyright 1995 by the Peabody Museum of Natural History, Yale University. All rights reserved. No part of this publication, except brief quotations for scholarly purposes, may be reproduced without written permission of the Director, Peabody Museum of Natural History.

ISBN No. 0-912532-38-6

Introduction

Woods Hole, MA 02543

This is the first in a series of type catalogs of fossil invertebrates and is a product of an ongoing computerization project to improve the accessibility of the type collections. The order of publication of type catalogs will depend on the ease of verification of the type status and taxonomic history of the species in each group.

This catalog lists all known fossil hexapod types in the Invertebrate Paleontology Collections housed in Yale University's Peabody Museum of Natural History. Many of the descriptions of species authored by Robin J. Tillyard indicate dual repositories for the type specimens. Charles Schuchert, who had contracted Tillyard to describe the Elmo insects, reluctantly agreed to an arrangement whereby Tillyard retained the counterparts of individuals for many of the species Tillyard described. In 1934, as Tillyard's health began to fail, Schuchert and Carl O. Dunbar convinced Tillyard that the counterparts should be returned to Yale. Shortly after Tillyard's death in 1937, his wife turned the specimens over to Yale, in accordance with her husband's wishes.

Tillyard, in his series on Kansas Permian Insects (1923-1937) describes many of Sellards' (1909) species from Elmo, Kansas. For many of these species he designates neotypes, but also refers to many specimens as paratypes and syntypes. Unfortunately, Sellards' (1909) type specimens have not been located and Tillyard's references to these types are incorrect.

A described specimen of *Platynus* sp. (YPM 11) and the holotypes of *Miamia bronsoni* Dana (YPM 1010), *Hemeristia occidentalis* Dana (YPM 1011), *Tipuloidea rhaetica* Wieland (YPM 34956), *Tipulidites affinis* Wieland (YPM 34957) and *Lasiosoma mirandula* Cockerell (YPM 34982) are missing and cannot be located. The collections have been thoroughly searched by the curatorial staff in the 1960s and 1980s and it is believed that these specimens are permanently lost. Any information on the whereabouts of these specimens would be greatly appreciated.

Organization

Specimens are listed under the originally described binomen; genera and species within genera are presented alphabetically. Each entry includes the catalog number used by the Division of Invertebrate Paleontology prefixed with the coden YPM and the type status of the original designation, followed by all known references to that name. Any subsequent designations are listed under the original designation and are cross-referenced in the body of the text. Errors and inconsistencies appear in footnotes after the locality description.

The type designations used are holotype, syntype, and neotype for name bearers; paratype and allotype for secondary types; and hypotype for all tertiary types. Name bearers and secondary types are defined as used in the *International Code of Zoological Nomenclature* (ICZN, 1985). Tertiary types or hypotypes are treated here as any described, figured or measured specimen used in a publication to augment the knowledge of a previously defined species, or any referred specimen that cannot be placed unequivocally in a known species (e.g., *Psocidium* sp.).

Locality descriptions follow each entry or set of entries with identical locality data. The locality information includes the stratigraphy, geography, collector and date. Stratigraphy has been standardized using

Stratigraphic Nomenclature Databases for the United States, its Possessions and Territories (MacLachlan et al., 1992). Group, formation and member names are abbreviated with *Grp*, *Fm* and *Mbr* respectively.

Catalog of Hexapoda

Acilius florissantensis Wickham

HOLOTYPE YPM 5

Wickham, H.F. 1909. Am. J. Sci. ser.4,v.28, n.164,p.127.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado. USA.

Acosmelytron acutum Tillyard

HOLOTYPE YPM 5414

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21, n.123,p.254.

=*Acosmelytron elongatum* Tillyard.

Hypotype. Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.481.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

Acosmelytron delicatum Tillyard

HOLOTYPE YPM 5416

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21, n.123,p.254,tf.13.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.481.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Acosmelytron elongatum* Tillyard**

HOLOTYPE YPM 5415

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.253,tf.12.Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.481.See also *Acosmelytron acutum* Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Acosmelytron?* sp.**

HYPOTYPE YPM 5407, 5410

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.255.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

Adeloblatta sellardsii* (Handlirsch)**See *Etoflattoidea hilliana?* Scudder.Agenia saxigena* Cockerell**

HOLOTYPE YPM 104

Cockerell, T.D.A. 1908b. Am. J. Sci. ser.4,
v.25,n.147,p.229,tf.3.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Alepidophora pealei* Cockerell**

HOLOTYPE YPM 102

Cockerell, T.D.A. 1909a. Am. J. Sci. ser.4,
v.27,n.157,p.55.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Ametretus laevis* Handlirsch**

HOLOTYPE YPM 23

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,
v.31,n.184,p.303,tf.7.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Amousus mazonus* Handlirsch**

HOLOTYPE YPM 20

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,
v.31,n.184,p.301,tf.4.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Amphicomma defuncta* Wickham**

HOLOTYPE YPM 14

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29,
n.169,p.49.

Late Eocene, Florissant Lake Beds. Station 14,
Florissant, Teller Co., Colorado, USA.

***Ancylopsocus insolitus* Tillyard**

HOLOTYPE YPM 5109

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.345,tf.1D,19.

= *Permopsocus latipennis* Tillyard.

Hypotype. Carpenter, F.M. 1932. Am. J.
Sci. ser.5,v.24,n.139,p.13.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Anegertus cubitalis* Handlirsch**

HOLOTYPE YPM 43

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4,
v.31,n.185,p.353,tf.32.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Anepitedius giraffa* Handlirsch**

HOLOTYPE YPM 38

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.318,tf.23-25.

Burnham, Laurie. 1983. Psyche.v.90,n.1-2,p.45.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.***Anormochorista oligoclada* Tillyard**

HOLOTYPE YPM 5068

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11, n.62,p.156,tf.3,17.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Aphaenogaster mayri* Carpenter**

PARATYPE YPM 10030

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.30.

ALLOTYPE YPM 10031

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.30.PARATYPE? YPM 35035[†]Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.43.Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.[†]This specimen is marked and labeled as a
paratype with F.M. Carpenter's characteristic
symbols; although it is not referred to as such in
Carpenter (1930).***Aphodius laminicola* Wickham**

HOLOTYPE YPM 13

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29,
n.169,p.49.Late Eocene, Florissant Lake Beds. Station 14,
Florissant, Teller Co., Colorado, USA.***Apithanus jocularis* Handlirsch**

HOLOTYPE YPM 39

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,
v.31,n.184,p.320,tf.26,27.Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.***Archescytina muiri* (Tillyard)**See *Permoscytina muiri* Tillyard.***Archescytina permiana* Tillyard**

HOLOTYPE YPM 5111

Tillyard, R.J. 1926d. Am. J. Sci. ser.5,v.11,
n.65,p.386,tf.1,4.Carpenter, F.M. 1931b. Am. J. Sci. ser.5,
v.22,n.128,p.115.[†]Carpenter, F.M. 1939. Proc. Am. Acad. Arts
Sci. v.73,n.3,p.49,tf.15,pl.2,f.1.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.[†]Not No. 511b, Peabody Museum as stated on
p.115.***Archoblattina beecheri* (Sellards)**See *Megablattina beecheri* Sellards.***Artinska clara* Sellards**

HYPOTYPE YPM 1003

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323).[†]= *Artinska medialis* Sellards. Hypotype.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5263

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323),tf.1.[†]= *Artinska gracilis* var. *pentamera*
Handlirsch. Holotype. Handlirsch, Anton.
1937. Ann. Naturhist. Mus. Wien. v.48,
p.95,121.

HYPOTYPE YPM 5265

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323),tf.3.†

=*Artinska extensa* var. *tillyardi* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5285

Tillyard, R.J. 1928b. Am. J. Sci. ser.5, v.16,
n.94,p.322. †

HYPOTYPE YPM 5286

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323).†

=*Artinska gracilis* var.*simplex* Handlirsch.
Paratype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5287

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323),tf.5a.†

=*Artinska clara* var. *inversa* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5288

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,330.†

HYPOTYPE YPM 5290

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323),tf.5B.†

=*Artinska extensa* var. *nova* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5292

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323).†

=*Artinska medialis* Sellards. Hypotype.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5293

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,329.†

=*Artinska medialis* Sellards. Hypotype.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5294

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323).†

=*Artinska medialis* Sellards. Hypotype.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5295

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324).†

=*Estadia tenius* var. *aucta* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5296

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324).†

=*Estadia tenuis* var. *reducta* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5297

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324).†

=*Estadia tenuis* var. *kansasia* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5298

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324).†

= *Estadia tenuis* var. *altera* Handlirsch.
Holotype. Handlirsch., Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5299

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324),tf.5F.†

=*Estadia tenuis* var. *kansasia*? Handlirsch.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5301, 5307-5309

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322.†

HYPOTYPE YPM 5302

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324),tf.5D.†

=*Estadia tenuis* var. *banneria* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5303

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,330.†

=*Estadia tenuis* var. *altera* ? Handlirsch.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95.

HYPOTYPE YPM 5304

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324),tf.5c.†

=*Estadia tenuis* var. *banneria*?. Handlirsch.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5305

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324).†

=*Estadia tenuis* var. *inversa* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5306

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324),tf.6A.†

=*Estadia anomalum* var. *confusa*
Handlirsch. Holotype. Handlirsch, Anton.
1937. Ann. Naturhist. Mus. Wien.
v.48,p.95,121.

HYPOTYPE YPM 5310

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tf.7.†

=undet. Insecta. Handlirsch, Anton. 1937.
Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5311, 5312, 5332-5353

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322.†

HYPOTYPE YPM 5354

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322.†

HYPOTYPE YPM 5355-5363

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322.†

HYPOTYPE YPM 5299

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324),tf.5F.†

=*Estadia tenuis* var. *kansasia*? Handlirsch.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5264

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.324),tf.2,4,5E.†

=*Estadia tenuis* var. *maculipennis*
Handlirsch. Holotype. Handlirsch, Anton.
1937. Ann. Naturhist. Mus. Wien.
v.48,p.95,121.

HYPOTYPE YPM 5290

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.322,tbl.(p.323),tf.5B.†

=*Artinska extensa* var. *nova* Handlirsch.
Holotype. Handlirsch, Anton. 1937. Ann.
Naturhist. Mus. Wien. v.48,p.95,121.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

†Tillyard (1928b) refers to each of these
specimens as paratypes on page 329; however,
none of these specimens is part of Sellards'
(1909) type series.

***Artinska clara* var. *submaculata* Tillyard**

HOLOTYPE YPM 5289

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.329,tbl.(p.323).

Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95,121.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

Artinska clara* var. *inversa* Handlirsch**See *Artinska clara* Sellards.Artinska colorata* Tillyard**See *Artinska ovata colorata* Tillyard.***Artinska extensa* var. *nova* Handlirsch**See *Artinska clara* Sellards.***Artinska extensa* var. *tillyardi*
Handlirsch**See *Artinska clara* Sellards.***Artinska gracilis* var. *pentameta*
Handlirsch**See *Artinska clara* Sellards.***Artinska gracilis* var. *simplex* Handlirsch**See *Artinska clara* Sellards.***Artinska medialis* Sellards.**See *Artinska clara* Sellards.***Artinska ovata* (Sellards)**

HYPOTYPE YPM 5313, 5314

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331.†

HYPOTYPE YPM 5315

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331,tf.9.†Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95,121.HYPOTYPE YPM 5316, 5318-5321, 5324-
5331, 5364-5369Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331.†

HYPOTYPE YPM 5322

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331,tf.11.†=*Orta sellardsiana* Handlirsch. Holotype.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.96,122.

HYPOTYPE YPM 5323

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331,tf.10.†=*Orta tillyardiana* Handlirsch. Holotype.
Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.96,121.

HYPOTYPE YPM 5370

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331.†Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331.†

HYPOTYPE YPM 5371-5375

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.331.†Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.†Tillyard (1928b) refers to each of these
specimens as paratypes on page 334, however;
none of these specimens is part of Sellards'
(1909) type series.***Artinska ovata* var. *colorata* Tillyard**

HOLOTYPE YPM 5317

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.333,tf.12.=*Artinska colorata*. Tillyard. Handlirsch,
Anton. 1937. Ann. Naturhist. Mus. Wien.
v.48,p.95,96,121.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Artinska sellardsi* Tillyard**

HOLOTYPE YPM 5291

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16,
n.94,p.330,tf.8.Carpenter, F.M. 1935. Proc. Am. Acad. Arts
Sci. v.70,n.4,p.124.Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.95,121.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect

bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen affinis* Tillyard**

HOLOTYPE YPM 5050

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11, n.61,p.65,tf.2.

=*Doter affinis* (Tillyard). Carpenter, F.M. 1930c. Psyche.v.37,n.4,p.361.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen affinis?* Tillyard**

HYPOTYPE YPM 5048

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11, n.61,p.65.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen dunbari* Tillyard**

HOLOTYPE YPM 5004

Tillyard, R.J. 1924b. Am. J. Sci. ser.5,v.8, n.44,p.118,tf.3.

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11, n.61,p.65.

=*Doter minor* Sellards. Hypotype. Carpenter, F.M. 1930c. Psyche.v.37,n.4, p.360.

PARATYPE YPM 1706

Tillyard, R.J. 1924b. Am. J. Sci. ser.5,v.8, n.44,p.118.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect

bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen gracilis* Tillyard**

HOLOTYPE YPM 5045

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11, n.61,p.66,tf.3.

=*Doter minor* Sellards. Hypotype. Carpenter, F.M. 1930c. Psyche.v.37, n.4,p.360.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen gracilis?* Tillyard**

HYPOTYPE YPM 5047

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11, n.61,p.66.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen kansasensis* Tillyard**

HOLOTYPE YPM 5044

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11, n.61,p.67,tf.5.

=*Doter minor* Sellards. Hypotype. Carpenter, F.M. 1930c. Psyche.v.37,n.4,p.360,pl.17,f.12.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Asthenohymen pusillus* Tillyard**

HOLOTYPE YPM 5051

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11,
n.61,p.68,tf.7.=*Doter pusillus*. Carpenter, F.M. 1930c.
Psyche. v.37,n.4,p.362.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Asthenohymen stenobasis* Tillyard**

HOLOTYPE YPM 5049

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11,
n.61,p.67,tf.6.=*Doter minor* Sellards. Hypotype.
Carpenter, F.M. 1930c. Psyche.v.37,n.4,
p.360.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Asthenohymen stigmatizans* Tillyard**

HOLOTYPE YPM 5046

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11,
n.61,p.66,tf.4.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Asyncritus reticulatus* Handlirsch**

HOLOTYPE YPM 44

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4,
v.31,n.185,p.355,tf.33Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.***Athymodictya parva* Handlirsch**

HOLOTYPE YPM 18

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,
v.31,n.184,p.298,tf.1,2.=*Eubleptus danielsi* Handlirsch. Hypotype.
Carpenter, F.M. 1983. Psyche.v.90,n.1-2 ,
p.84,tf.6,8.Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.***Blattaria incertae sedis***

HYPOTYPE YPM 15698

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34,
n.202,p.263,tf.24.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Blattelytron permianum* Tillyard**

HOLOTYPE YPM 5409

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.250,tf.9.Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.480.Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.***Blattinopsis kukalovae* Carpenter**

PARATYPE YPM 15582, 15633

Carpenter, F.M. 1966. Psyche.v.73,n.1,p.68.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

(Blattoidea) anceps (Sellards)

See *Mylacris anceps* Sellards.

(Blattoidea) melanderi Handlirsch

HOLOTYPE YPM 63

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4,v.31,n.185,p.371,tf.54.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

(Blattoidea) sellardsiana Handlirsch

See *Mylacris elongatus* Scudder.

(Blattoidea) sellardsii Handlirsch

See *Mylacris diplodicus* Sellards.

(Blattoidea) sp.

See *Etblattina mazona* Scudder.

?(Blattoidea) sp.

See *Etblattina mazona* Scudder.

Cacurgus spiloferus Handlirsch

HOLOTYPE YPM 41

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.324,tf.29,30.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

Calosoma calvini Wickham

HOLOTYPE YPM 4

Wickham, H.F. 1909. Am. J. Sci. ser.4,v.28, n.164,p.126.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

Calosoma cockerelli Wickham

HOLOTYPE YPM 10

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29, n.169,p.47.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

Calvertiella permiana Tillyard

HOLOTYPE YPM 5007

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.47,tf.1,2a.

Kukalova, Jarmila. 1964. Psyche.v.71,n.4, p.158,tf.1,4A,pl.19.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

Camponotus fuscipennis Carpenter

PARATYPE YPM 10029

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.59.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

Camponotus petrifactus Carpenter

PARATYPE YPM 10034

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.60.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

Camptotaxineura ephialtes Tillyard

HOLOTYPE YPM 15590

Tillyard, R.J. 1937a. Am. J. Sci. ser.5, v.33, n.194,p.90,tf.3.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

Carabites kinkaidi Cockerell

HOLOTYPE YPM 26164

Cockerell, T.D.A. 1908a. Am. J. Sci. ser.4, v.25,n.145,p.51,tf.3.

Eocene, Green River Fm. Red shales at Green River, Sweetwater Co., Wyoming, USA.

***Carabites russelli* Cockerell**

HOLOTYPE YPM 25709A

Cockerell, T.D.A. 1928. Am. J. Sci. ser.5, v.15,n.85,p.37,tf.1E(center).

Late Cretaceous, Maastrichtian, Fox Hills Fm. Concretionary bed, "CAS" [the Ammonite Bed of W.L. Russell's unpub. manuscript], several feet thick in a series of arenaceous shale, about 110 feet above the Fox Hills base [or 190-200 feet below the Base of the Lance], 10 miles SW of Dupree, Ziebach Co., South Dakota, USA. Collector: Russell, W.L.

(?) *Carabites* sp.

HYPOTYPE YPM 25707

Northrop, S.A. 1928. Am. J. Sci. ser.5, v.15, n.85,p.37.

Late Cretaceous, Maastrichtian, Fox Hills Fm. Concretionary bed, "CAS" [the Ammonite Bed of W.L. Russell's unpub. manuscript], several feet thick in a series of arenaceous shale, about 110 feet above the Fox Hills base [or 190-200 feet below the Base of the Lance], 10 miles SW of Dupree, Ziebach Co., South Dakota, USA. Collector: Russell, W.L.

***Chaetopsocidium sellardsi* Tillyard**

HOLOTYPE YPM 5098

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.332,tf.10.

=*Dichentomum tinctum* Tillyard. Hypotype. Carpenter, F.M. 1932. Am. J. Sci. ser.5,v.24,n.139,p.7,tf.2.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Cheliphlebia mazona* Handlirsch**

HOLOTYPE YPM 46

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.358,tf.35.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr.

Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Chelopterus peregrinus* Carpenter**

PARATYPE YPM 15443, 15658, 26905, 26906

Carpenter, F.M. 1950. Proc. Am. Acad. Arts Sci. v.78,n.4,p.199.

PARATYPE YPM 15645

Carpenter, F.M. 1950. Proc. Am. Acad. Arts Sci. v.78,n.4,p.199,pl.3,f.1.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Choristosialis enigmatica* Tillyard**

HOLOTYPE YPM 5425

Tillyard, R.J. 1932a. Am. J. Sci. ser.5, v.23, n.133,p.20,tf.8.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Corymbites granulicollis* Wickham**

HOLOTYPE YPM 1

Wickham, H.F. 1908. Am. J. Sci. ser.4,v.26, n.151,p.76,tf.1.

Wickham, H.F. 1916. Bull. Mus. Comp. Zool. Harvard Univ. v.60,n.12,p.524.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA. Collector: Rohwer, S.A.

***Corymbites primitivus* Wickham**

HOLOTYPE YPM 2

Wickham, H.F. 1908. Am. J. Sci. ser.4,v.26, n.151,p.77,tf.2.

Wickham, H.F. 1916. Bull. Mus. Comp. Zool. Harvard Univ. v.60,n.12,p.524.†

Late Eocene, Florissant Lake Beds. Station 13, Florissant, Teller Co., Colorado, USA. Collector: Rohwer, G.N.

†Incorrectly cited as "Station 14, Florissant".

***Curculionites hylobioides* Northrop**

HOLOTYPE YPM 25704

Northrop, S.A. 1928. Am. J. Sci. ser.5,v.15, n.85,p.32,tf.1A,1B.

Late Cretaceous, Maastrichtian, Fox Hills Fm. Concretionary bed, "CAS" [the Ammonite Bed of W.L. Russell's unpub. manuscript], several feet thick in a series of arenaceous shale, about 110 feet above the Fox Hills base [or 190-200 feet below the Base of the Lance], 10 miles SW of Dupree, Ziebach Co., South Dakota, USA. Collector: Russell, W.L.

***Curculionites northropi* Cockerell**

HOLOTYPE YPM 25708

Cockerell, T.D.A. 1928. Am. J. Sci. ser.5, v.15, n.85,p.37,tf.1D.

Late Cretaceous, Maastrichtian, Fox Hills Fm. Concretionary bed, "CAS" [the Ammonite Bed of W.L. Russell's unpub. manuscript], several feet thick in a series of arenaceous shale, about 110 feet above the Fox Hills base [or 190-200 feet below the Base of the Lance], 10 miles SW of Dupree, Ziebach Co., South Dakota, USA. Collector: Russell, W.L.

***Curculionites* sp.**

HYPOTYPE YPM 25706

Northrop, S.A. 1928. Am. J. Sci. ser.5,v.15, n.85,p.36.

Late Cretaceous, Maastrichtian, Fox Hills Fm. Concretionary bed, "CAS" [the Ammonite Bed of W.L. Russell's unpub. manuscript], several feet thick in a series of arenaceous shale, about 110 feet above the Fox Hills base [or 190-200 feet below the Base of the Lance], 10 miles SW of Dupree, Ziebach Co., South Dakota, USA. Collector: Russell, W.L.

***Curculionites vulpinus* Northrop**

HOLOTYPE YPM 25705

Northrop, S.A. 1928. Am. J. Sci. ser.5,v.15, n.85,p.36,tf.1C.

Late Cretaceous, Maastrichtian, Fox Hills Fm. Concretionary bed, "CAS" [the Ammonite Bed of W.L. Russell's unpub. manuscript], several feet

thick in a series of arenaceous shale, about 110 feet above the Fox Hills base [or 190-200 feet below the Base of the Lance], 10 miles SW of Dupree, Ziebach Co., South Dakota, USA. Collector: Russell, W.L.

***Delopsocus elongatus* (Sellards)**

HYPOTYPE YPM 5386

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.475,tf.4.†

HYPOTYPE YPM 5389

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.475,476,tf.5.†

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

†Tillyard (1928c) refers to each of these specimens as paratypes on page 476, however, none of these specimens is part of Sellards' (1909) type series.

***Delopsocus fasciatus* Tillyard**

HOLOTYPE YPM 5377

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.476,tf.6,7.

PARATYPE YPM 5376, 5404

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.476.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Delopsocus latus* (Sellards)**

HYPOTYPE YPM 5378

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.477.†

HYPOTYPE YPM 5379

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.477,tf.8.†

HYPOTYPE YPM 5380-5381, 5383, 5384,
5390, 5401

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.477.[†]

HYPOTYPE YPM 5382

Tillyard, R.J. 1928c. Am. J. Sci.
ser.5,v.16,n.96,p.477,tf.9.[†]

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

[†]Tillyard (1928c) refers to each of these
specimens as paratypes on page 478, however;
none of these specimens is part of Sellards'
(1909) type series.

***Delopterum dunbari* Tillyard**

HOLOTYPE YPM 5392

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.473,tf.2.

=*Delopterum minutum* Sellards. Hypotype.
Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.453.

PARATYPE YPM 5402

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.473,tf.3.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.454.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Delopterum dunbari?* Tillyard**

HYPOTYPE YPM 5387-5388, 5391, 5397,
5399-5400

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.474.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N

road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Delopterum minutum* Sellards**

HYPOTYPE YPM 5385

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.472.,tf.1.[†]

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.453,pl.1,f.4.

See also *Delopterum dunbari* Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

[†]Tillyard (1928c) refers to each of these
specimens as a paratype on page 472; however,
this specimen is not part of Sellards' (1909) type
series.

***Delopterum minutum?* Sellards**

HYPOTYPE YPM 5393-5394

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.473.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Demopterum gracile* Carpenter**

PARATYPE YPM 15562, 15646, 15793

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.204.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,

T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Dichentomum minimum* (Tillyard)**

See *Psocidium minimum* Tillyard.

***Dichentomum tinctum* Tillyard**

HOLOTYPE YPM 5071

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.320.

Carpenter, F.M. 1932. Am. J. Sci. ser.5,
v.24,n.139,p.7.

HYPOTYPE YPM 5077

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.328,tf.1A,9.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.443.

See also *Chaetopsocidium sellardsi*
Tillyard, *Psocidium abnormale* Tillyard,
Metapsocidium loxoneurum Tillyard,
Pentapsocidium indistinctum Tillyard,
Permentomum tenuiforme Tillyard, and
Psocidium permianum Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Dicranomyia rhodolitha* Cockerell**

HOLOTYPE YPM 26167

Cockerell, T.D.A. 1908b. Am. J. Sci. ser.4,
v.25,n.147,p.228,tf.2.

Eocene, Green River Fm. Red shales at Green
River, Sweetwater Co., Wyoming, USA.

***Dictyobiella nervosa* Tillyard**

HOLOTYPE YPM 15592

Tillyard, R.J. 1937a. Am. J. Sci. ser.5, v.33,
n.194,p.105,tf.8.

=*Permoberothes villosa* Carpenter.

Holotype. Carpenter, F.M. 1943b. Proc. Am.
Acad. Arts Sci. v.75,n.2,p.63.†

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N

road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

†Carpenter (1943b) determined that 5426 and
15592 are part and counterpart of one specimen.

***Dieconeura mazona* Handlirsch**

HOLOTYPE YPM 31

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,
v.31,n.184,p.310,tf.15.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Diexodus debilis* Handlirsch**

HOLOTYPE YPM 21

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,
v.31,n.184,p.302,tf.5.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Ditaxineura anomalostigma* Tillyard**

HOLOTYPE YPM 5054

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11,
n.61,p.71,tf.8.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5,
v.21,n.122,p.123.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Dolichoderus antiquus* Carpenter**

PARATYPE YPM 10000, 10002

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.39.

PARATYPE YPM 35032

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.39.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Dolichoderus rohweri* Carpenter**

PARATYPE YPM 35033

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.40.

Late Eocene, Florissant Lake Beds. Station 14,
Florissant, Teller Co., Colorado, USA. Collector:
Cockerell, W.P., 1907.

***Donacia* sp.**

HYPOTYPE YPM 12816

Cooper, G.A. 1930. Bull. Connecticut Geol.
Nat. Hist. Surv. p.255,pl.2,f.6.

Quaternary, Recent, Wabash time. Ditch in a
swamp S of the Park Lane schoolhouse, 1.75
miles N of New Milford, Litchfield Co., Connecti-
cut, USA. Collector: Hicock, H.W.

***Doter affinis* (Tillyard)**

See *Asthenohymen affinis* Tillyard.

***Doter minor* Sellards**

HYPOTYPE YPM 5043

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,v.11,
n.61,p.61,tf.1.

Carpenter, F.M. 1930c. Psyche.v.37,
n.4,p.360.

See also *Asthenohymen dunbari* Tillyard,
Asthenohymen gracilis Tillyard,
Asthenohymen kansasensis Tillyard and
Asthenohymen stenobasis Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Doter pusillus* (Tillyard)**

See *Asthenohymen pusillus* Tillyard.

***Dunbaria fasciipennis* Tillyard**

HOLOTYPE YPM 1001

Tillyard, R.J. 1924a. Am. J. Sci. ser.5,v.7,
n.39,p.205,pl.1,f.A.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5,

v.21,n.122,p.97.

Kukalova, Jarmila. 1971. Psyche.v.78,n.4,
p.306,tf.5,6,10,11.

ALLOTYPE YPM 1002

Tillyard, R.J. 1924a. Am. J. Sci. ser.5,v.7,
n.39,p.205,pl.1,f.B,pl.2,f.A.

Tillyard, R.J. 1925a. Am. J. Sci. ser.5,v.9,
n.52,p.328,tf.3.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5,
v.21,n.122,p.97.

Kukalova, Jarmila. 1971. Psyche.v.78,n.4,
p.306,tf.1,2B,2C,3,12.

PARATYPE YPM 1050

Tillyard, R.J. 1924a. Am. J. Sci. ser.5,v.7,
n.39,p.205.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5,
v.21,n.122,p.97.

Kukalova, Jarmila. 1971. Psyche.v.78,
n.4,p.306,tf.4.

HYPOTYPE YPM 5020

Tillyard, R.J. 1925a. Am. J. Sci. ser.5,v.9,
n.52,p.328.

Kukalova, Jarmila. 1971. Psyche.v.78,n.4,
p.306,tf.8.

HYPOTYPE YPM 5021

Tillyard, R.J. 1925a. Am. J. Sci. ser.5,v.9,
n.52,p.328.

Kukalova, Jarmila. 1971. Psyche.v.78,n.4,
p.306,tf.13.

HYPOTYPE YPM 5022

Tillyard, R.J. 1925a. Am. J. Sci. ser.5,v.9,
n.52,p.328.

Kukalova, Jarmila. 1971.Psyche.v.78,n.4,
p.306.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Dytiscus* sp.**

HYPOTYPE YPM 12832

Cooper, G.A. 1930. Bull. Connecticut Geol. Nat. Hist. Surv. p.255,pl.4.

Quaternary, Recent, Wabash time. A pit excavated in a hollow, a short distance NE of the Park Lane schoolhouse, 1.75 miles N of New Milford, Litchfield Co., Connecticut, USA. Collector: Cooper, G.A. and C.B. Hunt.

***Elaeomyrmex coloradensis* Carpenter**

PARATYPE YPM 10022-10023

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.49.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Elaeomyrmex gracilis* Carpenter**

PARATYPE YPM 10020

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.49.[†]

PARATYPE YPM 10021

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.49.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

[†]Not 10021 as stated on page 49.

***Elmoa trisecta* Tillyard**

HOLOTYPE YPM 15591

Tillyard, R.J. 1937a. Am. J. Sci. ser.5, v.33, n.194,p.84,tf.1.

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75,n.2,p.56.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Embia florissantensis* Cockerell**

HOLOTYPE YPM 26169

Cockerell, T.D.A. 1908b. Am. J. Sci. ser.4, v.25,n.147,p.231,tf.4.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Enallagma florissantella* Cockerell**

HOLOTYPE YPM 26172

Cockerell, T.D.A. 1908d. Am. J. Sci. ser.4, v.26,n.151,p.70,tf.2.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA. Collector: Cockerell, T.D., 1906.

***Eobanksia bittaciformis* Cockerell**

PARATYPE YPM 34983

Cockerell, T.D.A. 1909b. Am. J. Sci. ser.4, v.27,n.161,p.384,tf.8,9B.[†]

Rodeck, H.G. 1938. Colorado Univ. Stud. v.25,n.4,p.288.

= *Taphacris bittaciformis* tillyard Cockerell. Paratype. Cockerell, T.D.A.1926. Proc. Entomol. Soc. Washington v.28,n.6,p.142.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA.

[†]Cockerell (1909b) cites this specimen as a cotype on page 385 but designates another specimen as "the type".

***Eomerope tortriciformis* Cockerell**

HOLOTYPE YPM 26176

Cockerell, T.D.A. 1909b. Am. J. Sci. ser.4, v.27,n.161,p.381,tf.1-7.

Carpenter, F.M. 1972. Psyche.v.79,n.1-2, p.81,tf.1,5.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA.

***Ephemera howarthi* Cockerell**

HOLOTYPE YPM 26170

Cockerell, T.D.A. 1908b. Am. J. Sci. ser.4, v.25,n.147,p.232,tf.5.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA. Collector: Cockerell, T.D., 1906.

***Epideigma elegans* Handlirsch**

HOLOTYPE YPM 45

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.356,tf.34.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Estadia anomalum* var. *confusa*
Handlirsch**

See *Artinska clara* Sellards.

***Estadia anomalum* var. *pentamera*
Handlirsch**

HOLOTYPE YPM 5300

Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48, p.95, 121.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S, R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Estadia tenuis* var. *altera* Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *altera*? Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *aucta* Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *banneria* Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *banneria*?
Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *inversa* Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *kansasia* Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *kansasia*?
Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *maculipennis*
Handlirsch**
See *Artinska clara* Sellards.

***Estadia tenuis* var. *reducta* Handlirsch**
See *Artinska clara* Sellards.

***Etblattoidea* var. *hilliana*? Scudder**

HYPOTYPE YPM 59

Sellards, E.H. 1904b. Am. J. Sci. ser.4,
v.18, n.105, p.213, pl.1, f.4.

=? *Phyloblatta sellardsii* Handlirsch.
Holotype. Handlirsch, Anton. 1906. Proc.
U.S. Nat. Mus. v.29, n.1441, p.739.

= *Phyloblatta sellardsii* Handlirsch.
Handlirsch, Anton. 1908. Leipzig Verlag von
Wilhelm Engelmann. p.205, pl.21, f.15.

= *Adeloblatta sellardsii* (Handlirsch).
Holotype. Handlirsch, Anton. 1911b. Am. J.
Sci. ser.4, v.31, n.185, p.367, tf.50.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Etblattina mazona* Scudder**

HYPOTYPE YPM 57

Sellards, E.H. 1903. Am. J. Sci. ser.4, v.15,
n.80, p.309, pl.7, f.3, 4.

Sellards, E.H. 1904a. Am. J. Sci. ser.4,
v.18, n.104, p.129, f.13, pl.1, f.2.

=? (*Blattoidea*) sp. Handlirsch, Anton. 1906.
Proc. U.S. Nat. Mus. v.29, n.1441, p.801.

= (*Protblattoidea*?) *minor* Handlirsch.
Holotype. Handlirsch, Anton. 1908. Leipzig
Verlag von Wilhelm Engelmann. p.152,
pl.15, f.15.

= (*Protblattoidea*?) *minor* Handlirsch.
Handlirsch, Anton. 1911b. Am. J. Sci. ser.4,
v.31, n.185, p.366, tf.48.

HYPOTYPE YPM 27871

Sellards, E.H. 1904a. Am. J. Sci. ser.4, v.18,
n.104, p.129, tf.12.

= (*Blattoidea*) sp. Handlirsch, Anton. 1906.
Proc. U.S. Nat. Mus. v.29, n.1441, p.802.

= (*Blattoidea*) sp. Handlirsch, Anton. 1908.
Leipzig Verlag von Wilhelm Engelmann.
p.180, pl.18, f.40.†

HYPOTYPE YPM 27872

Sellards, E.H. 1903. Am. J. Sci. ser.4, v.15,
n.80, p.311.

Sellards, E.H. 1904a. Am. J. Sci. ser.4, v.18,
n.104, p.129, tf.11.

Sellards, E.H. 1908. Kansas Geol. Surv. (Rpt.). v.9,ch.11,p.180,pl.18,f.39.

=(*Blattoidea*) sp. Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.802.

=(*Blattoidea*) sp. Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. p.180,pl.18,f.39.†

HYPOTYPE YPM 27873

Sellards, E.H. 1904a. Am. J. Sci. ser.4,v.18, n.104,p.129,f.10.

Sellards, E.H. 1908. Kansas Geol. Surv. (Rpt.). v.9,ch.11,p.180,pl.18,f.39.

=(*Blattoidea*) sp. Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.802.

=(*Blattoidea*) sp. Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. p.180,pl.18,f.38.†

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

†Images are reversed on plate 18, figures 38-40.

***Eubleptus danielsi* Handlirsch**

See *Athymodictya parva* Handlirsch.

***Eucaenus mazonus* Melander**

HYPOTYPE YPM 51

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.362,tf.42.

Carpenter, F.M. and E.S. Richardson, Jr. 1976. Psyche.v.83,n.3-4,p.225.

See also *Eucaenus minor* Handlirsch.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Eucaenus minor* Handlirsch**

HOLOTYPE YPM 47

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.361,tf.40,41.

=*Eucaenus mazonus* Melander. Hypotype.
Carpenter, F.M. and E.S. Richardson, Jr. 1976. Psyche.v.83,n.3-4,p.225.

Middle Pennsylvanian, Desmoinesian,

Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Eucaenus ovalis* Scudder**

HYPOTYPE YPM 48

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.359,tf.36.

Carpenter, F.M. and E.S. Richardson, Jr. 1976. Psyche.v.83,n.3-4,p.225.

HYPOTYPE YPM 49

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.359,tf.37.

Carpenter, F.M. and E.S. Richardson, Jr. 1976. Psyche.v.83,n.3-4,p.225.

HYPOTYPE YPM 50

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.359,tf.38.

Carpenter, F.M. and E.S. Richardson, Jr. 1976. Psyche.v.83,n.3-4,p.225.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Eucaenus pusillus* Handlirsch**

HOLOTYPE YPM 52

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.362,tf.43.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Eudoter delicatulus* Tillyard**

HOLOTYPE YPM 1014

Carpenter, F.M. 1979. Psyche.v.86,n.2-3, p.282.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Formica cockerelli* Carpenter**

PARATYPE YPM 10026

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.57.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Formica robusta* Carpenter**

PARATYPE YPM 10025

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.56.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Gerarulus radialis* Handlirsch**

HOLOTYPE YPM 37

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.316,tf.22.

Burnham, Laurie. 1983. Psyche.v.90,n.1-2, p.43,tf.26,27.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Gerarus collaris* Handlirsch**

HOLOTYPE YPM 34

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.314,tf.18

Burnham, Laurie. 1983. Psyche.v.90,n.1-2, p.26,tf.12,13.

See also *Gerarus longicollis* Handlirsch

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Gerarus danielsi* Handlirsch**

See *Gerarus latus* Handlirsch and *Gerarus(?) reductus* Handlirsch.

***Gerarus latus* Handlirsch**

HOLOTYPE YPM 33

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.312,tf.17.

=*Gerarus danielsi* Handlirsch. Hypotype. Burnham, Laurie. 1983. Psyche.v.90,n.1-2, p.17.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Gerarus longicollis* Handlirsch**

HOLOTYPE YPM 36

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.315,tf.21.

=*Gerarus collaris* Handlirsch. Hypotype. Burnham, Laurie. 1983. Psyche.v.90,n.1-2, p.26.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Gerarus(?) reductus* Handlirsch**

HOLOTYPE YPM 35

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.314,tf.19,20.

=*Gerarus danielsi* Handlirsch. Hypotype. Burnham, Laurie. 1983. Psyche.v.90,n.1-2, p.17.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Hemeristia occidentalis* Dana**

HOLOTYPE YPM 1011[†]

Dana, J.D. 1864. Am. J. Sci. ser.2,v.37, n.109,p.35,f.2.

Scudder, S.H. 1865. Am. J. Sci. ser.2,v.40, n.119,p.269.

Scudder, S.H. 1866. Mem. Boston Soc. Nat. Hist. v.1,pt.2,p.19,f.1,3.

Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. pl.33,f.19.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. In the Carboniferous beds at Morris, Grundy Co., Illinois, USA. Collector: Bronson, J.G.

[†]A thorough search of the collections by the curatorial staff in the 1960s and 1980s failed to locate this specimen. It is believed to be permanently lost.

***Hirmoneura melanderi* Cockerell**

HOLOTYPE YPM 14172

Cockerell, T.D.A. 1908c. Am. J. Sci. ser.4, v.25,n.148,p.311.

=*Neorhynchocephalus? melanderi* (Cockerell). Bequaert, J.C. and F.M. Carpenter. 1936. J. Paleont. v.10,n.5, p.403,tf.3,7(3).

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA. Collector: Hill, C.

***Hirmoneura vulcanica* Cockerell**

HOLOTYPE YPM 14173

Cockerell, T.D.A. 1908c. Am. J. Sci. ser.4, v.25,n.148,p.311.

=*Neorhynchocephalus vulcanicus* (Cockerell). Bequaert, J.C. and F.M. Carpenter. 1936. J. Paleont. v.10,n.5,p.401,tf.4,7(4).

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA.

***Homocladus ornatus* Carpenter**

HOLOTYPE YPM 15584

Carpenter, F.M. 1966. Psyche.v.73,n.1, p.62,tf.5.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Hoplonoeschna separata* (Scudder)**

HYPOTYPE YPM 26174

Cockerell, T.D.A. 1908d. Am. J. Sci. ser.4, v.26,n.151,p.74.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA.

***Iridomyrmex florissantius* Carpenter**

PARATYPE YPM 10024

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.50.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Kansasia pulchra* Tillyard**

HOLOTYPE YPM 15589

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33, n.194,p.85,tf.2.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Kennedya mirabilis* Tillyard**

HOLOTYPE YPM 5006

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.65,tf.10(upper),11,12A.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5, v.21,n.122,p.116,tf.5(in part).

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.418.

Carpenter, F.M. 1939. Proc. Am. Acad. Arts Sci. v.73,n.3,p.45.

PARATYPE? YPM 5005†

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.65,tf.10(lower),12b.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5, v.21,n.122,p.116,tf.5(in part).

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.418.

Carpenter, F.M. 1939. Proc. Am. Acad. Arts Sci. v.73,n.3,p.45,ftn.14.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

†Carpenter (1933) refers to this specimen as "the types (Nos. 5005, 5006)"; however, Tillyard (1925b) does not refer to this specimen as part of the type series.

***Lameereites curvipennis* Handlirsch**

HOLOTYPE YPM 66

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.374,tf.59,60.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Lasiosoma mirandula* Cockerell**

HOLOTYPE YPM 34982†

Cockerell, T.D.A. 1909a. Am. J. Sci. ser.4, v.27,n.157,p.53.

Late Eocene, Florissant Lake Beds. Station 13B, Florissant, Teller Co., Colorado, USA. Collector: Darling, G.

†A thorough search of the collections by the curatorial staff in the 1960s and 1980s failed to locate this specimen. It is believed to be permanently lost.

***Lasius peritulus* (Cockerell)**

PARATYPE YPM 10027

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.58.

PARATYPE? YPM 10028†

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.58.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

†This specimen is marked and labeled as a paratype with F.M. Carpenter's characteristic symbols although it is not referred to as such in Carpenter (1930).

***?Lecopterum delicosum* Sellards**

HYPOTYPE YPM 15574

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33, n.198,p.421.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lecorium elongatum* Sellards**

HYPOTYPE YPM 5267

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340), tf.18.†

=*Metalecorium anomalum* Handlirsch. Holotype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5270

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340), tf.16.†

=*Paralecorium parvum* Handlirsch. Syntype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5272

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340), tf.17.†

=*Metalecorium confusum* Handlirsch. Holotype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5273-5274

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340).†

HYPOTYPE YPM 5275

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341.

=*Metalecorium* ? sp.. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5276

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340).

=*Paralecorium parvum* Handlirsch. Syntype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5277

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340).

=*Orta reducta* Handlirsch. Hypotype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

HYPOTYPE YPM 5279

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341,tbl.(p.340).

=*Stemma extensa*? Sellards. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.97.

HYPOTYPE YPM 5281

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.341.

=*Metalecorium*? sp. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.97.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

†Tillyard (1928b) refers to each of these specimens as paratypes on page 343; however, none of these specimens is part of Sellards' (1909) type series.

***Lema evanescens* Wickham**

HOLOTYPE YPM 15

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29, n.169,p.50.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Lemmatophora cubitalis* Handlirsch**

See *Lemmatophora minuta* (Sellards).

***Lemmatophora longipennis* Sellards**

See *Paraprisca fragilis* (Sellards).

***Lemmatophora minuta* var. *obscurata* Tillyard**

SYNTYPE YPM 5196

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.219,tf.16.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

SYNTYPE YPM 5197

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.219,tf.16.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,

T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lemmatophora minuta* (Sellards)**

HYPOTYPE YPM 5198, 5206, 5207, 5209, 5211-5215

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215.

HYPOTYPE YPM 5208

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215,tf.17B.

=*Lemmatophora cubitalis* Handlirsch. Holotype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

HYPOTYPE YPM 5217

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.95,121.

HYPOTYPE YPM 5218-5223, 5225-5239

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215.

HYPOTYPE YPM 5240

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215,tf.17A.

HYPOTYPE YPM 5241-5246, 5259-5261

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lemmatophora minuta* var. *pusilla* Tillyard**

HOLOTYPE YPM 5193

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.218,218,219,tf.18.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lemmatophora minuta* var. *semitincta* Tillyard**

HOLOTYPE YPM 5216

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.218.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lemmatophora reducta* Tillyard**

HOLOTYPE YPM 5224

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.219,tf.19.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lemmatophora typica* Tillyard**

HYPOTYPE YPM 1004

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191,tf.6.

HYPOTYPE YPM 5115

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191,tf.1-4.

Carpenter, F.M. 1935. Proc. Am. Acad. Arts Sci. v.70,n.4,p.110(footnote).

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.92.

Carpenter, F.M. 1966. Psyche.v.73,n.1, p.55,pl.5.

HYPOTYPE YPM 5116-5122, 5124-5146, 5148-5149, 5151-5160, 5162-5191, 5199, 5202-5205

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191.

HYPOTYPE YPM 5123

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191,214,tf.5A,B.

HYPOTYPE YPM 5147

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191,tf.11.

Carpenter, F.M. 1935. Proc. Am. Acad. Arts Sci. v.70,n.4,p.110.

HYPOTYPE YPM 5150

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191,tf.10.

HYPOTYPE YPM 5161

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.191,tf.9.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lemmatophora typica* var. *conjuncta* Tillyard**

HOLOTYPE YPM 5200

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.212,tf.14.

=?*Lemmatophora typica* var.*conjuncta* Tillyard. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.92.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at

SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

**?*Lemmatophora typica* var. *conjuncta*
Handlirsch**

See *Lemmatophora minuta* (Sellards).

***Lemmatophora typica* var. *quadrifurcata*
Tillyard**

HOLOTYPE YPM 5192

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16,
n.93,p.212.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Lemmatophora typica* var. *quadrimedia*
Tillyard**

HOLOTYPE YPM 5201

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16,
n.93,p.213,tf.15.

Handlirsch, Anton. 1937. Ann. Naturhist.
Mus. Wien. v.48,p.92.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Liometopum miocenicum* Carpenter**

PARATYPE YPM 10013-10016

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.46.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Liometopum scudderi* Carpenter**

PARATYPE YPM 10017

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.47.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Liomopterum elongatum* Sellards**

NEOTYPE YPM 15612

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.192,pl.1,f.2.

HYPOTYPE YPM 15573

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.192.

HYPOTYPE YPM 26902

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.192.[†]

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

[†]Not "No. 15749, Peabody Museum" as stated on
page 194.

***Liomopterum ornatum* Sellards**

HYPOTYPE YPM 15608-15609, 15619,
26901

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.189.

HYPOTYPE YPM 15621

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.189,p.tf.2a.

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.189,p.tf.2a.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Liomopterum sellardsi* Carpenter**

PARATYPE YPM 16180

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.194.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect

bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lisca minuta* Sellards**

HYPOTYPE YPM 5210

Tillyard, R.J. 1928a. Am. J. Sci. ser.5,v.16, n.93,p.215.

Carpenter, F.M. 1935. Proc. Am. Acad. Arts Sci. v.70,n.4,p.115.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Lithagrion hyalinum* Scudder**

HYPOTYPE YPM 26171

Cockerell, T.D.A. 1908d. Am. J. Sci. ser.4, v.26,n.151,p.69,tf.1.

Late Eocene, Florissant Lake Beds. Station 17, Florissant, Teller Co., Colorado, USA.

***Lithopanorpa pusilla* (Tillyard)**

See *Protopanorpa pusilla* Tillyard.

***Macratia gigantea* Wickham**

HOLOTYPE YPM 17

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29, n.169,p.51.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA.

***Martynovia insignis* Tillyard**

HOLOTYPE YPM 5423

Tillyard, R.J. 1932a. Am. J. Sci. ser.5,v.23, n.133,p.15,tf.5,6.

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75,n.2,p.58.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at

SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Martynovia protohymenoides* (Tillyard)**

See *Martynoviella protohymenoides* Tillyard.

***Martynoviella protohymenoides* Tillyard**

HOLOTYPE YPM 5424

Tillyard, R.J. 1932a. Am. J. Sci. ser.5,v.23, n.133,p.19,tf.7.

=*Martynovia protohymenoides* (Tillyard).

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75,n.2,p.59.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Megablattina beecheri* Sellards**

HOLOTYPE YPM 8412

Sellards, E.H. 1903. Am. J. Sci. ser.4,v.15, n.80,p.312,pl.8,f.1.

=*Archoblattina beecheri* (Sellards).

Sellards, E.H. 1904b. Am. J. Sci.ser.4,v.18, n.105, p.218,tf.30.

=*Archoblattina beecheri* (Sellards).

Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.726.

=*Archoblattina beecheri* (Sellards).

Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. pl.20,f.1,2.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Megatypus ingentissimus* Tillyard**

HOLOTYPE YPM 5010

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.58,tf.9.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5, v.21,n.122,p.106.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Megatypus ingentissimus?* Tillyard**

HOLOTYPE YPM 5025-5026

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.59.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Megatypus schucherti* Tillyard**

HOLOTYPE YPM 1021

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.53,tf.5-7.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5, v.21,n.122,p.106.

Carpenter, F.M. 1939. Proc. Am. Acad. Arts Sci. v.73,n.3,p.39,ftn.10.

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75,n.2,p.55.

PARATYPE? YPM 5009†

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.53,tf.8.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5, v.21,n.122,p.106.

=*Typus readi* Carpenter. Hypotype.

Carpenter, F.M. 1939. Proc. Am. Acad. Arts Sci. v.73,n.3,p.38,ftn.10.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

†Although this specimen is not designated a paratype in Tillyard (1925b), it is marked with Tillyard's characteristic symbol for paratype.

***Megelytron robustum* Tillyard**

HOLOTYPE YPM 5406

Tillyard, R.J. 1928d. Am. J. Sci. ser.5, v.21,n.123,p.247,tf.7,8.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.476.

Carpenter, F.M. and Jarmila Kukalova. 1964. Psyche.v.71,n.4,p.193,tf.6.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Melanactes cockerelli* Wickham**

HOLOTYPE YPM 3

Wickham, H.F. 1908. Am. J. Sci. ser.4,v.26, n.151,p.77,tf.3.

Wickham, H.F. 1916. Bull. Mus. Comp. Zool. Harvard Univ. v.60,n.12,p.527.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA. Collector: Cockerell, W.P.

***Melanagrion nigerrimum* Cockerell**

HOLOTYPE YPM 26168

Cockerell, T.D.A. 1908d. Am. J. Sci. ser.4, v.26,n.151,p.69.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA. Collector: Cockerell, W.P., 1907.

***Melinophlebia analis* Handlirsch**

HOLOTYPE YPM 55

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.364,tf.46

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Meracantha lacustris* Wickham**

HOLOTYPE YPM 8

Wickham, H.F. 1909. Am. J. Sci. ser.4,v.28,
n.164,p.129.

Late Eocene, Florissant Lake Beds. Station 11,
Florissant, Teller Co., Colorado, USA.

***Messor sculpturatus* Carpenter**

PARATYPE YPM 10032

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.32.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Metalecorium anomalum* Handlirsch**

See *Lecorium elongatum* Sellards.

***Metalecorium confusum* Handlirsch**

See *Lecorium elongatum* Sellards.

***Metalecorium* sp.?**

See *Lecorium elongatum* Sellards.

***Metapsocidium loxoneurum* Tillyard**

HOLOTYPE YPM 5099

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.333,tf.11.

=*Dichentomum tinctum* Tillyard. Hypotype.
Carpenter, F.M. 1932. Am. J. Sci. ser.5,
v.24,n.139,p.7.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Miamia bronsoni* Dana**

HOLOTYPE YPM 1010†

Dana, J.D. 1864. Am. J. Sci. ser.2,v.37,
n.109,p.34,f.1.

Scudder, S.H. 1865. Am. J. Sci. ser.2,v.40,
n.119,p.268.

Scudder, S.H. 1866. Mem. Boston Soc. Nat.
Hist. v.1,pt.2,p.18,f.4.

Handlirsch, Anton. 1908. Leipzig Verlag von
Wilhelm Engelmann. pl.13,f.18.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr. In the
Carboniferous beds at Morris, Grundy Co.,
Illinois, USA. Collector: Bronson, J.G.

†A thorough search of the collections by the
curatorial staff in the 1960s and 1980s failed to
locate this specimen. It is believed to be
permanently lost.

***Miomymex impactus* (Cockerell)**

HYPOTYPE YPM 10018

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.52.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Miomymex striatus* Carpenter**

PARATYPE YPM 10019

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.54.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Misthodotes biguttatus* Tillyard**

HOLOTYPE YPM 1122

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.265,tf.21.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Misthodotes obtusus* Sellards.**

NEOTYPE YPM 5470

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.500.

Carpenter, F.M. 1979. Psyche.v.86,n.2-3,
p.279,tf.11.

HYPOTYPE YPM 1100

Carpenter, F.M. 1979. Psyche.v.86,n.2-3,
p.279.

HYPOTYPE YPM 1117

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.261.

HYPOTYPE YPM 5471

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.261,tbl.B.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Misthodotes obtusus?* (Sellards)**

HYPOTYPE YPM 5443, 5459

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.265.

HYPOTYPE YPM 5465

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.265,tbl.B.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Misthodotes ovalis* Tillyard**

HOLOTYPE YPM 1118

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.266,tbl.B,tf.3,4,6E,22.

ALLOTYPE YPM 5472

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.266,tf.22(in part).

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Mordella lapidicola* Wickham**

HOLOTYPE YPM 9

Wickham, H.F. 1909. Am. J. Sci. ser.4,v.28,
n.164,p.130.

Late Eocene, Florissant Lake Beds. Station

R13B, Florissant, Teller Co., Colorado, USA.
Collector: Rohwer, S.A.

***Mormolucoides articulatus* Hitchcock**

HYPOTYPE YPM 27497

Scudder, S.H. 1886. Mem. Boston Soc. Nat.
Hist. v.3,n.15,p.431,pl.45,f.10.

HYPOTYPE YPM 27498

Scudder, S.H. 1886. Mem. Boston Soc. Nat.
Hist. v.3,n.15,p.431,pl.45,f.16.

HYPOTYPE YPM 27499

Scudder, S.H. 1886. Mem. Boston Soc. Nat.
Hist. v.3,n.15,p.431,pl.45,f.2.

HYPOTYPE YPM 27500

Scudder, S.H. 1886. Mem. Boston Soc. Nat.
Hist. v.3,n.15,p.431,pl.45,f.4.

HYPOTYPE YPM 27501

Scudder, S.H. 1886. Mem. Boston Soc. Nat.
Hist. v.3,n.15,p.431,pl.45,f.1.

HYPOTYPE YPM 27502

Scudder, S.H. 1868. Geological Magazine.
v.5,n.46,p.431,pl.45,f.8.

Scudder, S.H. 1886. Mem. Boston Soc. Nat.
Hist. v.3,n.15,p.431,pl.45,f.8.

Early Jurassic, Turner Falls Sandstone. Black
shale [property of T.M. Stoughton, Beers County
map, previously owned by Dr. Roswell Field], S
side of Connecticut River, Horse Race,
Montague, Franklin Co., Massachusetts, USA.
Collector: Marsh, O.C., April, 1867.

***Mycomya cockerelli* Johannsen**

HOLOTYPE YPM 24753

Johannsen, O.A. 1912. Am. J. Sci. ser.4,
v.34,n.200,p.140,tf.1.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA. Collector: Cockerell, T.D.

Mylacrid nymph

HYPOTYPE YPM 27868

Sellards, E.H. 1903. Am. J. Sci. ser.4,v.15,
n.80,p.311,pl.7,f.9.

=*Mylacris anceps* Sellards. Holotype.
Sellards, E.H. 1904a. Am. J. Sci.
ser.4,v.18,n.104,p.129,tf.5.

=(*Blattoidea*) *anceps* (Sellards). Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.800.

=(*Blattoidea*) *anceps* (Sellards). Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. pl.18,f.24.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Mylacris diplodocus* Sellards**

HOLOTYPE YPM 27869

Sellards, E.H. 1904a. Am. J. Sci. ser.4,v.18, n.104,p.124,tf.3.

=(*Blattoidea*) *sellardsii* Handlirsch. Holotype. Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.800.

=(*Blattoidea*) *sellardsii* Handlirsch. Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. pl.18,f.33.†

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

† The image on plate18, figure 33 is reversed.

***Mylacris elongata* Scudder**

HOLOTYPE YPM 3934

Sellards, E.H. 1904a. Am. J. Sci. ser.4,v.18, n.104,p.125,tf.8,9,pl.1,f.1.

=?*Mylacris sellardsii* Handlirsch . Holotype. Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.779.

=?*Mylacris sellardsii* Handlirsch . Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. pl.28,f.13.

HOLOTYPE YPM 27870

Sellards, E.H. 1904a. Am. J. Sci. ser.4,v.18, n.104,p.125,f.6,7.

=(*Blattoidea*) *sellardsiana* Handlirsch. Holotype. Handlirsch, Anton. 1906. Proc. U.S. Nat. Mus. v.29,n.1441,p.800.

=(*Blattoidea*) *sellardsiana* Handlirsch. Handlirsch, Anton. 1908. Leipzig Verlag von Wilhelm Engelmann. p.180,pl.18,f.37.†

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

†The image on plate 18, figure 37 is reversed.

?*Mylacris sellardsii* Handlirsch

See *Mylacris elongata* Scudder.

***Narkema taeniatum* Handlirsch**

HOLOTYPE YPM 40

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4,v.31,n.184,p.322,tf.28.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Necrotaulius (Tipulidites) affinis* Wieland**

See *Tipulidites affinis* Wieland.

***Neorhynchocephalus? melanderi* (Cockerell)**

See *Hirmoneura melanderi* Cockerell.

***Neorhynchocephalus? vulcanica* (Cockerell)**

See *Hirmoneura vulcanica* Cockerell.

***Nugonioneura problematica* Tillyard**

HOLOTYPE YPM 15561

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33, n.194,p.94,tf.4.

HOLOTYPE YPM 27936

Carpenter, F.M. 1976. Psyche.v.84,n.3-4,p.337,tf.2.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Ologlyptus primus* Wickham**

HOLOTYPE YPM 16

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29, n.169,p.51.

Late Eocene, Florissant Lake Beds. Station 13, Florissant, Teller Co., Colorado, USA.

***Orta reducta* Handlirsch**

See *Lecorium elongatum* Sellards.

***Orta sellardsiana* Handlirsch**

See *Artinska ovata* Sellards.

***Orta tillyardiana* Handlirsch**

See *Artinska ovata* Sellards.

***Orthomylacris contorta* Handlirsch**

HOLOTYPE YPM 61

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31, n.185, p.369, ff.52.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Pachysystropus rohweri* Cockerell**

HOLOTYPE YPM 26175

Cockerell, T.D.A. 1909a. Am. J. Sci. ser.4, v.27, n.157, p.57, ff.1.

Late Eocene, Florissant Lake Beds. Station 9, Florissant, Teller Co., Colorado, USA. Collector: Rohwer, S.A., 1906

***Paleuthygramma acuta* Carpenter**

PARATYPE YPM 15571-15572

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75, n.2, p.71.

HYPOTYPE YPM 15655-15657, 15661

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75, n.2, p.71.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S, R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Parablattelytron rectum* Tillyard**

HOLOTYPE YPM 5413

Tillyard, R.J. 1928d. Am. J. Sci. ser.5, v.21, n.123, p.252, ff.11.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68, n.11, p.483.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N

road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S, R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Parablattelytron subincisum* Tillyard**

HOLOTYPE YPM 5408

Tillyard, R.J. 1928d. Am. J. Sci. ser.5, v.21, n.123, p.251, ff.10.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68, n.11, p.482.[†]

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S, R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

[†] Carpenter (1933) incorrectly refers to these specimens as "No. 5401ab, Peabody Museum".

***Paralecorium parvum* Handlirsch**

See *Lecorium elongatum* Sellards.

***Paralogopsis longipes* Handlirsch**

HOLOTYPE YPM 65

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31, n.185, p.374, ff.58.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Paraprisca fragilis* (Sellards)**

HYPOTYPE YPM 5194

Tillyard, R.J. 1928b. Am. J. Sci. ser.5, v.16, n.94, p.336, ff.13.[†]

=*Lemmatophora longipennis* Handlirsch. Holotype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48, p.93, 121.

HYPOTYPE YPM 5195, 5257, 5284

Tillyard, R.J. 1928b. Am. J. Sci. ser.5, v.16, n.94, p.336.[†]

HYPOTYPE YPM 5250

Tillyard, R.J. 1928b. Am. J. Sci. ser.5, v.16, n.94, p.336, ff.14A.[†]

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

HYPOTYPE YPM 5251

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.336,tf.14D.†

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

HYPOTYPE YPM 5252, 5254, 5256, 5258

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.336.†

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.93.

HYPOTYPE YPM 5253

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.336,tf.14B.†

HYPOTYPE YPM 5255

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.336,tf.14C.†

HYPOTYPE YPM 5262

Tillyard, R.J. 1928. Am. J. Sci. ser.5,v.16, n.94,p.336,tf.15.†

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.94.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

†Tillyard (1928b) refers to each of these specimens as paratypes on page 337; however, none of these specimens is part of Sellards' (1909) type series.

***Paraprisca grandis* Carpenter**

HOLOTYPE YPM 15576

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33, n.194,p.97.

See also *Paraprisca stigmatica* Tillyard.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect

bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Paraprisca stigmatica* Tillyard**

HOLOTYPE YPM 15579

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33, n.194,p.97,tf.5.

=*Paraprisca grandis* Carpenter. Hypotype. Carpenter, F.M. 1939. Proc. Am. Acad. Arts Sci. v.73,n.3,p.67.

PARATYPE YPM 15596 15597

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33, n.194,p.97.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Paroedischia recta* Carpenter**

PARATYPE YPM 15638 16157

Carpenter, F.M. 1966. Psyche.v.73,n.1, p.79,tf.16(in part).

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Peltis laminata* Wickham**

HOLOTYPE YPM 12

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29, n.169,p.48.

Late Eocene, Florissant Lake Beds. Station R4, Florissant, Teller Co., Colorado, USA. Collector: Rohwer, S.A.

***Pentapsocidium indistinctum* Tillyard**

HOLOTYPE YPM 5100

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.335,tf.12.

=*Dichentomum tinctum* Tillyard. Hypotype.
Carpenter, F.M. 1932. Am. J. Sci.
ser.5,v.24,n.139,p.7.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Pericalyphe longa* Handlirsch**

HOLOTYPE YPM 54

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4,
v.31,n.185,p.363,tf.45.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Permelytron schucherti* Tillyard**

HOLOTYPE YPM 5411

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.247,tf.6.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.463.

Carpenter, F.M. 1939. Proc. Am. Acad. Arts
Sci. v.73,n.3,p.61.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permelytron?* sp.**

HYPOTYPE YPM 5412

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.255.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permembia delicatula* Tillyard**

HOLOTYPE YPM 5403

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16,
n.96,p.479,tf.10,11.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permentomum tenuiforme* Tillyard**

HOLOTYPE YPM 5101

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.336,tf.13.

=*Dichentomum tinctum* Tillyard. Hypotype.
Carpenter, F.M. 1932. Am. J. Sci.
ser.5,v.24,n.139,p.7.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permoberotha convergens* Tillyard**

See *Permoberotha villosa* Tillyard

***Permoberotha villosa* Tillyard**

HOLOTYPE YPM 5426

Tillyard, R.J. 1932b. Am. J. Sci. ser.5, v.23,
n.134,p.25,tf.12.

Carpenter, F.M. 1943b. Proc. Am. Acad.
Arts Sci. v.75,n.2,p.63.†

=*Permoberotha convergens* Tillyard.
Holotype. Tillyard, R.J. 1937a. Am. J. Sci.
ser.5, v.33,n.194,p.109,tf.10.

See also *Dictyobiella nervosa* Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

†Carpenter determined that 15592 and 5426 are part and counterpart of one specimen.

***Permobiella perspicua* Tillyard**

HOLOTYPE YPM 15593

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33, n.194,p.102,tf.7.

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75,n.2,p.76,tf.14A.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permoblattina curta* (Sellards)**

NEOTYPE YPM 15663

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.187,pl.2,f.10.

HYPOTYPE YPM 15664-15667, 15670-15673

Tillyard, R.J. 1937d. Am. J. Sci. ser.5, v.34,n.201,p.187.†

HYPOTYPE YPM 15668

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.187,pl.2,f.11.†

HYPOTYPE YPM 15669

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.187,pl.2,f.12.†

HYPOTYPE YPM 15674

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.187,pl.2,f.13b.†

HYPOTYPE YPM 15675

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.187,pl.2,f.13A.

HYPOTYPE YPM 15700, 15703-15722

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.187.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that

cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

†Tillyard (1937a) refers to each of these specimens as syntypes on page 189; however, none of these specimens is part of Sellards' (1908) type series.

***Permoblattina curta*? (Sellards)**

HYPOTYPE YPM 15676

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.194,tf.14.

HYPOTYPE YPM 15723

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.194.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permoblattina permiana* (Sellards)**

HYPOTYPE YPM 15677

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.195,tf.15.

HYPOTYPE YPM 15678, 15702, 15724-15732

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.195.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permoblattina permiana*? (Sellards)**

HYPOTYPE YPM 15679-15681

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.198.

HYPOTYPE YPM 15682

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34, n.201,p.198,tf.16A.

HYPOTYPE YPM 15683

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34,
n.201,p.198,tf.17.

HYPOTYPE YPM 15699

Tillyard, R.J. 1937d. Am. J. Sci. ser.5,v.34,
n.201,p.198,tf.16B.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permohymen schucherti* Tillyard**

HOLOTYPE YPM 5003

Tillyard, R.J. 1924b. Am. J. Sci. ser.5,v.8,
n.44,p.116,tf.2,pl.4,f.2.

Tillyard, R.J. 1926a. Am. J. Sci.ser.5,v.11,
n.61,p.61.

Carpenter, F.M. 1930c. Psyche.v.37,n.4,
p.354.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permopanorpa dunbari* Tillyard**

HOLOTYPE YPM 5062

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11,
n.62,p.149,tf.12.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permopanorpa formosa* Tillyard**

HOLOTYPE YPM 5057

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11,
n.62,p.144,tf.1,7.

Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.2,p.90.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permopanorpa gracilis* Tillyard**

HOLOTYPE YPM 5060

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11,
n.62,p.147,tf.2,10.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permopanorpa inaequalis* Tillyard**

HOLOTYPE YPM 5058

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11,
n.62,p.145,148 tf.8.

Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.2,p.87.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permopanorpa schucherti* Tillyard**

HOLOTYPE YPM 5061

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11,
n.62,p.148,tf.11.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Permopanorpa sellardsi* Tillyard**

HOLOTYPE YPM 5063

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11, n.62,p.150,tf.13.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permopanorpa tenuis* Tillyard**

HOLOTYPE YPM 5059

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11, n.62,p.146,tf.9.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permopsocus congener* Tillyard**

HOLOTYPE YPM 5107

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.341,tf.16.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permopsocus enderleini* Tillyard**

HOLOTYPE YPM 5108

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.342,tf.17,18.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permopsocus latipennis* Tillyard**

HOLOTYPE YPM 5106

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.340,tf.1C,15.

Carpenter, F.M. 1932. Am. J. Sci. ser.5, v.24,n.139,p.13.

See also *Ancylopsocus insolitus* Tillyard.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permopsylla americana* Tillyard**

HOLOTYPE YPM 5114

Tillyard, R.J. 1926d. Am. J. Sci. ser.5,v.11, n.65,p.391,tf.7.

Carpenter, F.M. 1931b. Am. J. Sci. ser.5, v.22,n.128,p.119.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permorphidia americana* Tillyard**

HOLOTYPE YPM 5422

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.8,tf.1,2.

Carpenter, F.M. 1943b. Proc. Am. Acad. Arts Sci. v.75,n.2,p.65,66.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permoscytina kansasense* Tillyard**

See *Permoscytina kansasensis* Tillyard.

***Permoscytina kansasensis* Tillyard**

HOLOTYPE YPM 5112

Tillyard, R.J. 1926d. Am. J. Sci. ser.5,v.11, n.65,p.388,tf.2,5.

=*Permoscytina kansasense*. Carpenter, F.M. 1931b. Am. J. Sci. ser.5,v.22,n.128, p.117.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Permoscytina muiri* Tillyard**

HOLOTYPE YPM 5113

Tillyard, R.J. 1926d. Am. J. Sci. ser.5,v.11, n.65,p.389,tf.3,6.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5,v.22, n.128,p.118.

=*Archescytina muiri* (Tillyard). Carpenter, F.M. 1939. Proc. Am. Acad. Arts Sci. v.73, n.3,p.49,tf.16.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Petraeomyrmex minimus* Carpenter**

PARATYPE YPM 10035

Carpenter, F.M. 1930a. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.1,p.55.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Phenopterum elongatum* (Sellards)**

PARATYPE YPM 15583, 15617, 15632, 15637

Carpenter, F.M. 1950. Proc. Am. Acad. Arts Sci. v.78,n.4,p.206.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect

bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Philydrus scudderi* Wickham**

HOLOTYPE YPM 6

Wickham, H.F. 1909. Am. J. Sci. ser.4,v.28, n.164,p.127.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA.

***Phyloblatta diversipennis* Handlirsch**

HOLOTYPE YPM 60

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.368,tf.51.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Phyloblatta sellardsii* Handlirsch**

See *Etblattoidea hilliana*? Scudder.

?*Phyloblatta sellardsii* Handlirsch

See *Etblattoidea hilliana*? Scudder.

***Platychorista venosa* Tillyard**

HOLOTYPE YPM 5067

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11, n.62,p.154,tf.16.

Carpenter, F.M. 1930b. Bull. Mus. Comp. Zool. Harvard Univ. v.70,n.2,p.78.

***Platychorista venosa* Tillyard**

See also *Protomerope permiana* Tillyard and *Progonopsocus pusillus* Tillyard.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Platymylacris paucinervis* Handlirsch**

HOLOTYPE YPM 62

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.370,tf.53.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Platynus* sp.**

HYPOTYPE YPM 11†

Wickham, H.F. 1910. Am. J. Sci. ser.4,v.29,
n.169,p.47.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA. Collector: Cockerell, W.P.

† A thorough search of the collections by the
curatorial staff in the 1960's and 1980's could not
locate this specimen. It is believed to be
permanently lost.

***Platypedia primigenia* Cockerell**

HOLOTYPE YPM 26165

Cockerell, T.D.A. 1908a. Am. J. Sci. ser.4,
v.25,n.145,p.52,tf.1,2.

Late Eocene, Florissant Lake Beds. Station 14,
Florissant, Teller Co., Colorado, USA. Collector:
Cockerell, W.P., 1907.

***Podabrus wheeleri* Wickham**

HYPOTYPE YPM 7

Wheeler, W.M. 1906. Am. Mus. J. v.6,n.4,
tf.(p.202).

Wickham, H.F. 1909. Am. J. Sci. ser.4,v.28,
n.164,p.128.

Late Eocene, Florissant Lake Beds. Station 13,
Florissant, Teller Co., Colorado, USA.

***Probnis speciosa* Sellards**

NEOTYPE YPM 15518

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417.

Carpenter, F.M. 1943b. Proc. Am. Acad.
Arts Sci. v.75,n.2,p.78.

HYPOTYPE YPM 15508, 15511-15513,
15515-15517

Tillyard, R.J. 1937c. Am. J. Sci. ser.5, v.33,
n.198,p.417.

HYPOTYPE YPM 15509

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1D.

HYPOTYPE YPM 15510

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.5B.

HYPOTYPE YPM 15514

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.6.

HYPOTYPE YPM 15519

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.4.†

HYPOTYPE YPM 15520-15522, 15524,
15527-15528, 15530-15532, 15535, 15538-
15547, 15549, 15551-15557, 15565-15567,
15575, 15598-15601, 15603-15605, 15611,
15751-15787.

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417.†

HYPOTYPE YPM 15523

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1B.†

HYPOTYPE YPM 15525

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1E.†

HYPOTYPE YPM 15526

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.3.†

HYPOTYPE YPM 15529

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1A.†

HYPOTYPE YPM 15533

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1G.†

HYPOTYPE YPM 15534

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1F.†

HYPOTYPE YPM 15536

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1C.†

HYPOTYPE YPM 15537

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.1H.†

HYPOTYPE YPM 15548

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.7.†

Carpenter, F.M. 1943b. Proc. Am. Acad.
Arts Sci. v.75,n.2,p.78,ftn.12.

HYPOTYPE YPM 15550

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.2.†

HYPOTYPE YPM 15560

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33,
n.198,p.417,tf.5A.†

Carpenter, F.M. 1943b. Proc. Am. Acad.
Arts Sci. v.75,n.2,p.78.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

†Tillyard (1937c) refers to each of these
specimens as syntypes on page 419; however,
none of these specimens is part of Sellards'
(1909) type series.

***Prochoroptera calopteryx* Handlirsch**

HOLOTYPE YPM 67

Handlirsch, Anton. 1911b. Am. J. Sci.
ser.4,v.31,n.185,p.367,tf.61-63.

Carpenter, F.M. 1940. Am. J. Sci. v.238,n.9,
p.639.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Progonopsocus permianus* Tillyard**

HOLOTYPE YPM 5104

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.338,tf.1B,14.

Carpenter, F.M. 1932. Am. J. Sci. ser.5,
v.24,n.139,p.12.

See also *Progonopsocus pusillus* Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N

road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Progonopsocus pusillus* Tillyard**

HOLOTYPE YPM 5105

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.339.

=*Progonopsocus permianus* Tillyard.

Hypotype. Carpenter, F.M. 1932. Am. J.
Sci. ser.5,v.24,n.139,p.12.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Promartynovia venicosta* Tillyard**

HOLOTYPE YPM 15594

Tillyard, R.J. 1937a. Am. J. Sci. ser.5,v.33,
n.194,p.100,tf.6.

Carpenter, F.M. 1966. Psyche.v.73,n.1,
p.83,tf.18.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protapate contorta* Wickham**

HOLOTYPE YPM 26163

Wickham, H.F. 1912. Bull. Iowa St. Univ.
Lab. Nat. Hist.v.6,n.3,p.20,pl.2,f.15.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA. Collector: Hill, C.

***Protazteca capitata* Carpenter**

PARATYPE YPM 10012

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.45.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Protazteca elongata* Carpenter**

PARATYPE YPM 10003-10009, 35034

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.43.

Late Eocene, Florissant Lake Beds. Station 14,
Florissant, Teller Co., Colorado, USA. Collector:
Cockerell, W.P., 1907.

***Protazteca quadrata* Carpenter**

PARATYPE YPM 10010-10011

Carpenter, F.M. 1930a. Bull. Mus. Comp.
Zool. Harvard Univ. v.70,n.1,p.44.

Late Eocene, Florissant Lake Beds. Florissant,
Teller Co., Colorado, USA.

***Protelytron dunbari* Tillyard**

HOLOTYPE YPM 5418

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.242.

=*Protelytron permianum* Tillyard. Hypotype.
Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.467.

PARATYPE YPM 5405

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.242.

=*Protelytron tillyardi* Carpenter. Hypotype.
Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.473.

PARATYPE YPM 5417

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.242.

=*Protelytron permianum* Tillyard. Hypotype.
Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.467.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protelytron permianum* Tillyard**

HOLOTYPE YPM 1019

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.240,tf.1-3,14.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.467.

See also *Protelytron dunbari* Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protelytron tillyardi* Carpenter**

See *Protelytron dunbari* Tillyard.

***Protelytron?* sp.**

HYPOTYPE YPM 5421

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.255.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protelytrospis grandis* Tillyard**

HOLOTYPE YPM 5420

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21,
n.123,p.245,tf.5.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.473.†

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

†Not "5426, Peabody Museum" as stated on
page 245.

***Protembia permiana* Tillyard**

HOLOTYPE YPM 15507

Tillyard, R.J. 1937b. Am. J. Sci. ser.5,v.33, n.196,p.245,tf.1-3.

Carpenter, F.M. 1950. Proc. Am. Acad. Arts Sci. v.78,n.4,p.209.

See *Telactinopteryx striatipennis* Tillyard.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Protereisma arcuatum* (Sellards)**

HYPOTYPE YPM 5455

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.255,tf.17.

HYPOTYPE YPM 5456-5457

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.255.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Protereisma elongatum* (Sellards)**

HYPOTYPE YPM 1102, 1113, 5432, 5439, 5453

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.254.

HYPOTYPE YPM 5454

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134, n.134,p.254,tf.6D.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Protereisma gracile* (Sellards)**

HYPOTYPE YPM 1104, 5431, 5440-5441, 5444, 5446-5448

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.252.

HYPOTYPE YPM 5435

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.252,tbl.B.

HYPOTYPE YPM 5442

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.252,tf.6A.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Protereisma insigne* Tillyard**

HOLOTYPE YPM 1112

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.259,tf.18.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.499.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Protereisma latum* Sellards**

HYPOTYPE YPM 1109, 1115, 5460-5462, 5464

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.256.

HYPOTYPE YPM 1116

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.256,tbl.B,tf.6B.

HYPOTYPE YPM 5463

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23, n.134,p.256,tbl.B.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at

SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protoreisma permianum* Sellards**

HYPOTYPE YPM 1009

Tillyard, R.J. 1923. J. Linn. Soc. London.
v.35,n.233,p.144,tf.1a.

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.247,271(postscript).

HYPOTYPE YPM 1103

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.247,tbl.B,tf.14(in part).

HYPOTYPE YPM 1105, 1114, 1120, 5428-
5430, 5433, 5436-5437, 5445, 5449-5450

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.247.

HYPOTYPE YPM 1119

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.247,tbl.B.

HYPOTYPE YPM 5427

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.247,tf.5,14(in part).

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.493.

HYPOTYPE YPM 5438

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.252,tbl.B,tf.6C,15.

Carpenter, F.M. 1933. Proc. Am. Acad. Arts
Sci. v.68,n.11,p.493.

HYPOTYPE YPM 5452

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.247,tbl.B,tf.7.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protoreisma sellardsi* Tillyard**

HOLOTYPE YPM 5434

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.251,tf.16.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protoreisma* sp.**

HYPOTYPE YPM 1023, 5466-5469, 5473-
5485, 5487-5500

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.260,272.

HYPOTYPE YPM 5486

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.260.

HYPOTYPE YPM 34976-34981

Tillyard, R.J. 1932b. Am. J. Sci. ser.5,v.23,
n.134,p.260.[†]

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

[†]Tillyard (1932b) refers to these specimens as
5501-5506 on page 260.

***(Protoblattoidea?) minor* Handlirsch.**

See *Etblattina mazona* Scudder.

***Protochorista pentaclada* Tillyard**

HOLOTYPE YPM 5056

Tillyard, R.J. 1926b. Am. J. Sci.ser.5,v.11,
n.62,p.141,tf.6.

=*Protochorista tetraclada* Carpenter.

Hypotype. Carpenter, F.M. 1930b. Bull.
Mus. Comp. Zool. Harvard Univ.
v.70,n.2,p.93.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at

SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protochorista tetracлада* Tillyard**

HOLOTYPE YPM 5055

Tillyard, R.J. 1926b. Am. J. Sci. ser.5, v.11,
n.62, p.141, tf.5.

Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70, n.2, p.93.†

See also *Protochorista pentaclada* Tillyard.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

†Carpenter (1930) incorrectly refers to this
specimen as "No. 5050, Peabody Museum" on
page 94.

***Prothymen permianus* Tillyard**

HOLOTYPE YPM 5001

Tillyard, R.J. 1924b. Am. J. Sci. ser.5, v.8,
n.44, p.114, tf.1, pl.4, f.1.

Tillyard, R.J. 1926a. Am. J. Sci. ser.5,
v.11, n.61, p.58.

Carpenter, F.M. 1930c. Psyche. v.37, n.4,
p.349.

PARATYPE YPM 1702, 5002

Tillyard, R.J. 1924b. Am. J. Sci. ser.5, v.8,
n.44, p.114.

Tillyard, R.J. 1926a. Am. J. Sci. ser.5, v.11,
n.61, p.58.

Carpenter, F.M. 1930c. Psyche. v.37, n.4,
p.349.

HYPOTYPE YPM 5035-5042, 5053

Tillyard, R.J. 1926a. Am. J. Sci. ser.5, v.11,
n.61, p.58.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,

T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protomerope permiana* Tillyard**

HOLOTYPE YPM 5069

Tillyard, R.J. 1926b. Am. J. Sci. ser.5, v.11,
n.62, p.159, 162, tf.4, 18.

=*Platychorista venosa* Carpenter. Paratype.
Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70, n.2, p.78, tf.1E

=*Platychorista venosa* Carpenter.
Remington, C.L. 1968. Discovery (Peabody
Mus. Nat. Hist., Yale Univ.). v.4, n.1, p.3, tf.6.

PARATYPE YPM 5070

Tillyard, R.J. 1926b. Am. J. Sci. ser.5, v.11,
n.62, p.159.

=*Platychorista venosa* Carpenter. Paratype.
Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70, n.2, p.78.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protopanorpa permiana* Tillyard**

HOLOTYPE YPM 5064

Tillyard, R.J. 1926b. Am. J. Sci. ser.5, v.11,
n.62, p.152, tf.14.

Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70, n.2, p.92.

ALLOTYPE YPM 5065

Tillyard, R.J. 1926b. Am. J. Sci. ser.5, v.11,
n.62, p.152.

Carpenter, F.M. 1930b. Bull. Mus. Comp.
Zool. Harvard Univ. v.70, n.2, p.92.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Protopanorpa pusilla* Tillyard**

HOLOTYPE YPM 5066

Tillyard, R.J. 1926b. Am. J. Sci. ser.5,v.11,
n.62,p.153,tf.15.

=*Lithopanorpa pusilla* (Tillyard). Carpenter,
F.M. 1930b. Bull. Mus. Comp. Zool. Harvard
Univ. v.70,n.2,p.96,pl.3,f.4.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium abnormale* Tillyard**

HOLOTYPE YPM 5073

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.324,tf.5,6.

=*Dichentomum tinctum* Tillyard. Hypotype.
Carpenter, F.M. 1932. Am. J. Sci. ser.5,
v.24,n.139,p.7.

=*Dichentomum tinctum* Tillyard. Carpenter,
F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,
n.11,p.443.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium kansasense* Tillyard**

HOLOTYPE YPM 5075

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.328,tf.8.

PARATYPE YPM 5076

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.328.

HYPOTYPE YPM 5078

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.328.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N

road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium kansasense?* Tillyard**

HYPOTYPE YPM 5079-5082, 5084-5090

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.330.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium minimum* Tillyard**

HOLOTYPE YPM 5110

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.330.

=*Dichentomum minimum* (Tillyard).
Carpenter, F.M. 1932. Am. J. Sci. ser.5,
v.24,n.139,p.9.

HYPOTYPE YPM 5083, 5091, 5092, 5103

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.330.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium permianum* Tillyard**

HOLOTYPE YPM 5072

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11,
n.64,p.323,tf.4.

=*Dichentomum tinctum* Tillyard. Hypotype.
Carpenter, F.M. 1932. Am. J. Sci.
ser.5,v.24,n.139,p.7.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that

cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium robustum* Tillyard**

HOLOTYPE YPM 5074

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.326,tf.7.

=*Dichentomum tinctum* (Tillyard). Hypotype. Carpenter, F.M. 1933. Proc. Am. Acad. Arts Sci. v.68,n.11,p.443.

PARATYPE YPM 5102

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.326.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Psocidium* sp.**

HYPOTYPE YPM 5093-5097

Tillyard, R.J. 1926c. Am. J. Sci. ser.5,v.11, n.64,p.330.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Pycnoblattina compacta* Sellards**

NEOTYPE YPM 15684

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.250,tf.18.

HYPOTYPE YPM 15685

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.250,tf.19.[†]

HYPOTYPE YPM 15686, 15688-15690, 15735-15739

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.250.[†]

HYPOTYPE YPM 15694

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.250,254,tf.21a,b.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

[†]Tillyard (1937e) refers to each of these specimens as syntypes on page 252; however, none of these specimens is part of Sellards' (1908) type series.

***Pycnoblattina curvata* Sellards**

NEOTYPE YPM 15691

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.252,tf.20.

HYPOTYPE YPM 15692, 15693, 15740-15745

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34,n.202,p.252.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Pycnoblattina* sp.**

HYPOTYPE YPM 15695

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.257,tf.22.

HYPOTYPE YPM 15696, 15750.

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.263.

HYPOTYPE YPM 15697

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.262,tf.23.

HYPOTYPE YPM 15701, 15746-15749

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.258.

HYPOTYPE YPM 15750

Tillyard, R.J. 1937e. Am. J. Sci. ser.5, v.34, n.202,p.263.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Sackenia gibbosa* Cockerell**

HOLOTYPE YPM 26178

Cockerell, T.D.A. 1907. Am. J. Sci. ser.4, v.23,n.136,p.285,tf.1.

Eocene, Green River Fm. Red shales at Green River, Sweetwater Co., Wyoming, USA.

***Scepasma gigas* Handlirsch**

HOLOTYPE YPM 22

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.302,tf.6

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Schuchertiella gracilis* Handlirsch**

HOLOTYPE YPM 32

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.311,tf.16.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Scytinoptera mexicana* Carpenter Miller**

HOLOTYPE YPM 15235

Carpenter, F.M. and A.K. Miller. 1937. Am. J. Sci. ser.5,v.34,n.200,p.126,tf.1.

Late Permian. Beds 5 6 or 7 of Difunta sec., concretionary sh, collection made along strike from Cerro Wencelao on south to 300 meters W of El Indio on north, NW of Las Delicias, Coahuila State, Mexico. Collector: King, R.E.

***Sellardsia abnormis?* Tillyard**

See *Sellardsia kansasensis* Tillyard.

***Sellardsia kansasensis* Tillyard**

HOLOTYPE YPM 5266

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.344,tbl.(p.340),tf.19.20.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96,122.

PARATYPE YPM 5268

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.344,tbl.(p.340).

=*Sellardsia abnormis?* Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.97,122.

PARATYPE YPM 5269

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.344,tbl.(p.340).

PARATYPE YPM 5278

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.344,tbl.(p.340),tf.21.

=*Sellardsia separanda* Handlirsch. Holotype. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96,97,122.

PARATYPE YPM 5280

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.344,tbl.(p.340).

=*Sellardsia* sp. Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.96.

PARATYPE YPM 5282, 5283

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.344.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Sellardsia lecorioides* Tillyard**

HOLOTYPE YPM 5271

Tillyard, R.J. 1928b. Am. J. Sci. ser.5,v.16, n.94,p.345,tbl.(p.340),tf.22.

Handlirsch, Anton. 1937. Ann. Naturhist. Mus. Wien. v.48,p.97.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Sellardsia separanda* Handlirsch**

See *Sellardsia kansasensis* Tillyard.

***Sellardsia* sp.**

See *Sellardsia kansasensis* Tillyard.

***Semopterum venosum* Carpenter**

PARATYPE YPM 15635

Carpenter, F.M. 1950. Proc. Am. Acad. Arts Sci. v.78,n.4,p.197.

PARATYPE YPM 26903

Carpenter, F.M. 1950. Proc. Am. Acad. Arts Sci. v.78,n.4,p.197.[†]

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

[†]Carpenter (1950) incorrectly refers to this specimen as "No. 15750, Peabody Museum" on page197.

***Silphion latipenne* Handlirsch**

HOLOTYPE YPM 56

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.365,tf.47.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera acutipennis* Handlirsch**

HOLOTYPE YPM 28

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.308,tf.12.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera angusta* Handlirsch**

HOLOTYPE YPM 30

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.309,tf.14.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera elatior* Handlirsch**

HOLOTYPE YPM 26

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.307,tf.10.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera lata* Handlirsch**

HOLOTYPE YPM 25

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.306,tf.9.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera longicollis* Handlirsch**

HOLOTYPE YPM 24

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.305,tf.8.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. In the lower part of the "true Coal Measures", Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera parvula* Handlirsch**

HOLOTYPE YPM 29

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.309,tf.13.

Middle Pennsylvanian, Desmoinesian, Carbondale Fm, Francis Creek Shale Mbr. Mazon Creek, Grundy Co., Illinois, USA. Collector: Strong, S.S.

***Spaniodera schucherti* Handlirsch**

HOLOTYPE YPM 27

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.308,tf.11.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Spilomastax oligoneurus* Handlirsch**

HOLOTYPE YPM 42

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.326,tf.31.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Stemma extensa?* Sellards**

See *Lecorium elongatum* Sellards.

***Stereopterum maculosum* Carpenter**

HOLOTYPE YPM 15653

Carpenter, F.M. 1966. Psyche.v.73,n.1, p.75,tf.13.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Stereopterum rotundum* Carpenter**

PARATYPE YPM 15634

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.202.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N
road cut, 20-100 ft W of culvert, and lower insect
bed, in draw about 600 ft a little W of N of that
cut, 3 miles S and 0.7 miles E of crossroads at
SE cor. of Elmo, SE1/4SW1/4SE1/4sec21,
T16S,R02E, Dickinson Co., Kansas, USA.
Collector: Dunbar, C.O., 1921.

***Syntomostylus (?) fortis* Cockerell**

HOLOTYPE YPM 26177

Cockerell, T.D.A. 1909d. Am. J. Sci. ser.4, v.28,n.167,p.447,tf.1a-d.

Eocene, Green River Fm. Red shales at Green
River, Sweetwater Co., Wyoming, USA.

***Syntonoptera schucherti* Handlirsch**

HOLOTYPE YPM 19

Handlirsch, Anton. 1911a. Am. J. Sci. ser.4, v.31,n.184,p.299,tf.3.

Carpenter, F.M. 1938. Am. J. Sci. ser.5, v.36,n.216,p.446.

Carpenter, F.M. 1943a. Illinois St. Mus. Sci.
Pap. v.3,n.1,p.12.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Sypharoptera pneuma* Handlirsch**

HOLOTYPE YPM 64

Handlirsch, Anton. 1911b. Am. J. Sci. ser.4, v.31,n.185,p.372,tf.55-57.

Carpenter, F.M. 1967. Psyche.v.74,n.1, p.79,tf.5.

Middle Pennsylvanian, Desmoinesian,
Carbondale Fm, Francis Creek Shale Mbr.
Mazon Creek, Grundy Co., Illinois, USA.
Collector: Strong, S.S.

***Telactinopteryx striatipennis* Tillyard**

HOLOTYPE YPM 15558

Tillyard, R.J. 1937c. Am. J. Sci. ser.5, v.33, n.198,p.422,tf.8,9A.

=*Protembia permiana* Tillyard. Hypotype.

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.209.

PARATYPE YPM 15559

Tillyard, R.J. 1937c. Am. J. Sci. ser.5,v.33, n.198,p.422,tf.9B,10.

=*Protembia permiana* Tillyard. Hypotype.

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.209.

PARATYPE YPM 15602

Tillyard, R.J. 1937c. Am. J. Sci. ser.5, v.33, n.198,p.422.

=*Protembia permiana* Tillyard. Hypotype.

Carpenter, F.M. 1950. Proc. Am. Acad. Arts
Sci. v.78,n.4,p.209.

Early Permian, Sumner Grp, Wellington Fm,
Elmo Limestone Mbr. Upper 2 insect beds in N

road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

Tipula n.sp.

HYPOTYPE YPM 26562

Cockerell, T.D.A. 1909c. Am. J. Sci. ser.4, v.28 n.165,p.286.

Late Eocene, Florissant Lake Beds. Florissant, Teller Co., Colorado, USA. Collector: Hill, C.

***Tipulidites affinis* Wieland**

HOLOTYPE YPM 34957†

Wieland, G.R. 1925b. Am. J. Sci. ser.5,v.9, n.49,p.25,tf.1.

=?*Necrotaulius (Tipulidites) affinis* (Wieland). Wieland, G.R. 1926. Am. J. Sci. ser.5,v.12,n.68,p.133,tf.1.

Tillyard, R.J. 1926e. Am. J. Sci. ser.5,v.11, n.63,p.271,tf.1.

Late Triassic, Rhaetian. Rhaetic stata at the Minas de Petoleo, in the Andean foothills southwest of Mendoza, Mendoza Province, Argentina. Collector: Wieland, G.R.

† A thorough search of the collections by the curatorial staff in the 1960s and 1980s failed to locate this specimen. It is believed to be permanently lost.

***Tipuloidea rhaetica* Wieland**

HOLOTYPE YPM 34956†

Wieland, G.R. 1925b. Am. J. Sci. ser.5,v.9, n.49,p.23,pl.1,f.1-3.

Tillyard, R.J. 1925c. Nature. v.116,n.2923, p.677,tf.1.

Wieland, G.R. 1926. Am. J. Sci. ser.5,v.12, n.68,p.133,tf.2.

Tillyard, R.J. 1926e. Am. J. Sci. ser.5,v.11, n.63,p.269,tf.3.

Late Triassic, Rhaetian. Rhaetic stata at the Minas de Petoleo, in the Andean foothills southwest of Mendoza, Mendoza Province, Argentina. Collector: Wieland, G.R.

† A thorough search of the collections by the

curatorial staff in the 1960's and 1980's could not locate this specimen. It is believed to be permanently lost.

***Trichonemis aliena* Scudder**

HYPOTYPE YPM 26173

Cockerell, T.D.A. 1908d. Am. J. Sci. ser.4, v.26,n.151,p.72,tf.3.

Late Eocene, Florissant Lake Beds. Station 13B, Florissant, Teller Co., Colorado, USA. Collector: Cockerell, W.P., 1907.

***Typus permianus* Sellards**

HYPOTYPE YPM 5008

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.49,tf.4.

Carpenter, F.M. 1931a. Am. J. Sci. ser.5, v.21,n.122,p.104.

HYPOTYPE YPM 5024

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.49,59.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Typus permianus?* Sellards**

HYPOTYPE YPM 5011-5012, 5023

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.59.

HYPOTYPE YPM 5013

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.60.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

***Typus readi* Carpenter**

See *Megatypus schucherti* Tillyard.

undet. Buprestidae?

HYPOTYPE YPM 16827

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. Science. v.201, p.730,f.3G

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5 miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Salvia, Robert, 07/1975.

undet. Coleoptera

HYPOTYPE YPM 16838

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. Science. v.201, p.730,f.3F

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5 miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Salvia, Robert, 07/1975.

undet. Copeognatha?

HYPOTYPE YPM 5419

Tillyard, R.J. 1928d. Am. J. Sci. ser.5,v.21, n.123,p.255.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

undet. Delopteridae

HYPOTYPE YPM 5395-5396, 5398

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.484.

HYPOTYPE YPM 5398

Tillyard, R.J. 1928c. Am. J. Sci. ser.5,v.16, n.96,p.484.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

undet. Glosselytrodea?

HYPOTYPE YPM 16829

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. Science. v.201, p.730,f.3C

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5 miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Broumbaugh, Robert, 06/1975.

undet. Insecta

See *Artinska clara* Sellards.

undet. Megatypidae

HYPOTYPE YPM 5014 -5019, 5027-5034

Tillyard, R.J. 1925b. Am. J. Sci. ser.5,v.10, n.55,p.60.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

undet. Neuroptera

HYPOTYPE YPM 16831

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. Science. v.201, p.730,f.3B

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5 miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Broumbaugh, Robert, 06/1975.

undet. Nitidulidae?

HYPOTYPE YPM 16828

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. *Science*. v.201, p.730,f.3H

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5 miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Salvia, Robert, 07/1975.

undet. Protorthoptera

HYPOTYPE YPM 15789

Kukalova-Peck, Jarmila. 1978. *J. Morphol.* v.156,n.1,p.61,pl.14,f.48.

Early Permian, Sumner Grp, Wellington Fm, Elmo Limestone Mbr. Upper 2 insect beds in N road cut, 20-100 ft W of culvert, and lower insect bed, in draw about 600 ft a little W of N of that cut, 3 miles S and 0.7 miles E of crossroads at SE cor. of Elmo, SE1/4SW1/4SE1/4sec21, T16S,R02E, Dickinson Co., Kansas, USA. Collector: Dunbar, C.O., 1921.

undet. Psocoptera

HYPOTYPE YPM 16839

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. *Science*. v.201,p.730.

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5 miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Salvia, Robert, 07/1975.

undet. Tipulidae

HYPOTYPE YPM 16826

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. *Science*. v.201, p.730,f.3A.

Late Triassic, Dan River Grp, Cow Branch Fm. Insect layer, unit b, cycle CB1-2, quarry CB1-2-D, 1000 ft above base of upper member of Cow Branch, main quarry of Solite Corporation, 0.5

miles N of Fitzgerald, and 0.5 miles WSW of Leaksville Junction, VA, Rockingham Co., North Carolina, USA. Collector: Olsen, P.E. and Broumbaugh, Robert, 06/1975.

***Zaitha vulcanica* Cockerell**

HOLOTYPE YPM 26166

Cockerell, T.D.A. 1908b. *Am. J. Sci.* ser.4, v.25,n.147,p.227,tf.1.

Late Eocene, Florissant Lake Beds. Station 14, Florissant, Teller Co., Colorado, USA. Collector: Cockerell, W.P., 1907.

Acknowledgments

Many people have participated in the production of this catalog. Karl Waage and A. Lee McAlester led a SWAT team of staff and students in search of type specimens scattered throughout the collections. May Dasch cataloged, curated, and researched the taxonomic history of many types. Larry Gall, Cope MacClintock and Eric Lazo-Wasem discussed the taxonomic history and type status of many species. Katja Zelljadt translated portions of Handlirsch's publications.

Literature Cited

- Bequaert, J.C. and F.M. Carpenter.** 1936. The Nemestrinidae of the Miocene of Florissant, Colorado, and their relations to the Recent fauna. *J. Paleont.* v.10,n.5, pp.395-409,11tf.
- Burnham, Laurie.** 1983. Studies on Upper Carboniferous Insects: 1. The Geraridae (Order Protorthoptera). *Psyche*.v.90,n.1-2,p.1-57,1tb.,28tf.
- Carpenter, F.M.** 1930a. The fossil ants of North America. *Bull. Mus. Comp. Zool. Harvard Univ.* v.70,n.1, 166pp.,11pl.
- 1930b. The Lower Permian Insects of Kansas. Pt. I. Introduction and the Mecoptera. *Bull. Mus. Comp. Zool. Harvard Univ.* v.70,n.2, 101pp.,5pl.
- 1930c. The Lower Permian Insects of Kansas. Pt. 3. The Protohymenoptera. *Psyche*.v.37,n.4, pp.343-374,4tf.,3pl.
- 1931a. The Lower Permian Insects of Kansas. Pt. 2. The orders Paleodictyoptera, Protodonata, and Odonata. *Am. J. Sci. ser.5*,v.21,n.122, pp.97-139,6tf.
- 1931b. The Lower Permian Insects of Kansas. Pt. 4. The order Hemiptera, and additions to the Paleodictyoptera and Protohymenoptera. *Am. J. Sci. ser.5*,v.22,n.128, pp.113-130,8tf.
- 1932. The Lower Permian Insects of Kansas. Pt. 5. Psocoptera and additions to the Homoptera. *Am. J. Sci. ser.5*,v.24,n.139,p.1-22,11tf.
- 1933. The Lower Permian Insects of Kansas. Pt. 6. Delopteridae, Protolytroptera, Plectoptera and a new collection of Protodonata, Odonata, Megasecoptera, Homoptera, and Psocoptera. *Proc. Am. Acad. Arts Sci.* v.68,n.11, pp.411-503,29tf.,1pl.
- 1935. The Lower Permian Insects of Kansas. Pt. 7. The order Protoperlaria. *Proc. Am. Acad. Arts Sci.* v.70,n.4, pp.103-146,11tf.,2tbl.,2pl.
- 1938. Two Carboniferous insects from the vicinity of Mazon Creek, Illinois. *Am. J. Sci. ser.5*,v.36,n.216, pp.445-452,3tf.
- 1939. The Lower Permian Insects of Kansas. Pt. 8. Additional Megasecoptera, Protodonata, Odonata, Homoptera, Psocoptera, Protelytroptera, Plectoptera, and Protoperlaria. *Proc. Am. Acad. Arts Sci.* v.73,n.3, pp.29-70,27tf.,2pl.
- 1940. Carboniferous insects from the Stanton Formation, Kansas. *Am. J. Sci.* v.238,n.9, pp.636-642,1tf.,1pl.
- 1943a. Carboniferous insects from the vicinity of Mazon Creek, Illinois. *Illinois St. Mus. Sci. Pap.* v.3,n.1, 20pp.,5tf.,4pl.
- 1943b. The Lower Permian Insects of Kansas. Pt. 9. The orders Neuroptera, Raphidioidea, Caloneuroidea and Protorthoptera (Probnisidae), with additional Protodonta and Megasecoptera. *Proc. Am. Acad. Arts Sci.* v.75,n.2, pp.55-84,16tf.,1pl.
- 1950. The Lower Permian Insects of Kansas. Pt. 10. The Order Protorthoptera—The family Limiopteridae and its relatives. *Proc. Am. Acad. Arts Sci.* v.78,n.4, pp.187-219,11tf.,3pl.
- 1966. The Lower Permian Insects of Kansas. Pt. 11. The orders Protorthoptera and Orthoptera. *Psyche*.v.73,n.1, pp.46-88,20tf.,4pl.
- 1967. Studies on North American Carboniferous Insects. Pt. 5. Palaeodictyoptera and Megasecoptera from Illinois and Tennessee, with a discussion of the order Sypharopteroidea. *Psyche*.v.74,n.1, pp.58-84,5tf.,7pl.
- 1972. The affinities of Eomerope and Dinopanorpa (Mecoptera). *Psyche*.v.79,n.1-2, pp.79-87,8tf.
- 1976. The Lower Permian Insects of Kansas. Pt. 12. Protorthoptera (continued), Neuroptera, additional Palaeodictyoptera, and families of uncertain position. *Psyche*.v.84,n.3-4, pp.336-378,23tf.
-

-
- 1979. Lower Permian Insects from Oklahoma. Pt. 2. Orders Ephemeroptera and Palaeodictyoptera. *Psyche*.v.86,n.2-3, pp.261-290,17ff.,1tbl.
- 1983. Studies on North American Carboniferous Insects. 7. The structure and Relationships of *Eubleptus danielsi* (Palaeodictyoptera). *Psyche*.v.90,n.1-2, pp.81-95,8tf.
- Carpenter, F.M. and A.K. Miller.** 1937. A Permian Insect from Coahuila, Mexico. *Am. J. Sci.* ser.5,v.34,n.200, pp.125-127,1tf.
- Carpenter, F.M. and E.S. Richardson, Jr.** 1976. Structure and Relationships of the Upper Carboniferous Insect, *Eucaenus ovalis* (Protorthoptera: Eucaenidae). *Psyche*.v.83,n.3-4, pp.223-242,8tf.
- Carpenter, F.M. and Jarmila Kukalova.** 1964. The Structure of the Protelytroptera, with description of a new genus from Permian Strata of Moravia. *Psyche*.v.71,n.4, pp.183-197,6tf.
- Cockerell, T.D.A.** 1907. A new fly (Fam. Mycetophilidae) from the Green River beds. *Am. J. Sci.* ser.4,v.23,n.136, pp.285-286,1tf.
- 1908a. Descriptions of Tertiary Insects. *Am. J. Sci.* ser.4,v.25,n.145, pp.51-52,3tf.
- 1908b. Descriptions of Tertiary Insects, Pt. II. *Am. J. Sci.* ser.4,v.25,n.147, pp.227-232,5tf.
- 1908c. Descriptions of Tertiary Insects, Pt. III. *Am. J. Sci.* ser.4,v.25,n.148, pp.309-312.
- 1908d. Descriptions of Tertiary Insects, Pt. IV. *Am. J. Sci.* ser.4,v.26,n.151, pp.69-75,4tf.
- 1909a. Descriptions of Tertiary Insects, Pt. V. *Am. J. Sci.* ser.4,v.27,n.157, pp.53-58,1tf.
- 1909b. Descriptions of Tertiary Insects, Pt. VI. *Am. J. Sci.* ser.4,v.27,n.161, pp.381-387,12tf.
- 1909c. Descriptions of Tertiary Insects, Pt. VII. *Am. J. Sci.* ser.4,v.28,n.165, pp.283-286,4tf.
- 1909d. Eocene fossils from Green River, Wyoming. *Am. J. Sci.* ser.4,v.28.,n.167, pp.447-448,2tf.
- 1926. A fossil orthopterous insect formerly referred to Mecoptera. *Proc. Entomol. Soc. Washington* v.28,n.6,p.142.
- 1928. Appendix, IN: Northrop, S.A., 1928, Beetles from the Fox Hills Cretaceous strata of South Dakota. *Am. J. Sci.* ser.5,v.15,n.85, pp.37-38,1tf.
- Cooper, G.A.** 1930. Fossil fauna of the marl deposits in the vicinity of New Milford. *Bull. Connecticut Geol. Nat. Hist. Surv.* n.47,pp.238-259,5pl.
- Dana, J.D.** 1864. On fossil insects from the Carboniferous formation in Illinois. *Am. J. Sci.* ser.2,v.37,n.109, pp.34-35,2tf.
- Handlirsch, Anton.** 1906. Revision of American Paleozoic insects. *Proc. U.S. Nat. Mus.* v.29,n.1441, pp.661-820,109tf.
- 1908. Die fossilen Insekten und die Phylogenie der rezenten Formen: ein Handbuch für Palaontologen und Zoologen. Leipzig Verlag von Wilhelm Engelmann. 1430pp.,51pl.
- 1911a. New Paleozoic insects from the vicinity of Mazon Creek, Illinois. *Am. J. Sci.* ser.4,v.31,n.184, pp.297-326,tf.1-31.
- 1911b. New Paleozoic Insects from the vicinity of Mazon Creek, Illinois (continued). *Am. J. Sci.* ser.4,v.31,n.185, pp.353-377,tf.32-63.
- 1937. Neue Untersuchungen über die fossilen Insekten. *Ann. Naturhist. Mus. Wien.* v.48, 140pp.
- International Commission on Zoological Nomenclature.** 1985. *International code of zoological nomenclature / adopted by the XX International union of biological sciences*; W.L. Ride, C.W. Sabrosky, G. Bernardi and R.V. Melville (eds.). Berkeley: University of
-

California Press, 338 pp.

Johannsen, O.A. 1912. A Tertiary fungus gnat. *Am. J. Sci.* ser.4,v.34,n.200, pp.140,1tf.

Kukalova, Jarmila. 1964. Review of the Calvertiellidae, with description of a new genus from Permian strata of Moravia (Palaeodictyoptera). *Psyche*.v.71,n.4, pp.153-168,4tf.,3pl.

——— 1971. The structure of *Dunbaria* (Palaeodictyoptera). *Psyche*.v.78,n.4, pp.306-318.

Kukalova-Peck, Jarmila. 1978. Origin and Evolution of insect wings and their relation to metamorphosis as documented by the fossil record. *J. Morphol.* v.156,n.1, pp.53-126.

MacLachlan, W.A., T.W. Bryant, E.D. Judkins, R.C. Koozmin, R.C. Orndorff, M.L.

Hubert, C.R. Murdock, S.W. Starrat and J.R. Le Compte (compilers). 1992. Stratigraphic nomenclature databases for the United States, its possessions and territories: Geologic Names Unit Lexicon (GNULEX). U.S. Geological Survey, Denver. 1 CD-ROM.

Northrop, S.A. 1928. Beetles from the Fox Hills Cretaceous strata of South Dakota. *Am. J. Sci.* ser.5,v.15,n.85, pp.28-38,1tf.

Olsen, P.E., C.L. Remington, Bruce Cornet and K.S. Thomson. 1978. Cyclic change in Late Triassic communities. *Science.* v.201, pp.729-733,4tf.

Remington, C.L. 1968. A rare and primitive winged insect from Chile. *Discovery* (Peabody Mus. Nat. Hist., Yale Univ.) v.4,n.1, pp.36-41,7tf.

Rodeck, H.G. 1938. Type specimens of fossils in the University of Colorado Museum. *Colorado Univ. Stud.* v.25,n.4, pp.281-304.

Scudder, S.H. 1865. On the fossil insects from Illinois, the *Miamia* and *Hemeristia*. *Am. J. Sci.* ser.2,v.40,n.119, pp.268-271.

——— 1866. An inquiry in the zoological relations of the first discovered traces of fossil neuropterous insects in North America: with remarks on the difference of structure on the wings of living Neuroptera. *Mem. Boston Soc. Nat. Hist.* v.1,pt.2, pp.173-192,1pl.

——— 1868. The fossil insects of North America. *Geological Magazine.* v.5,n.46, pp.172-177.

——— 1886. The oldest known insect-larvae, *Mormolucloides articulatus*, from the Connecticut River rocks. *Mem. Boston Soc. Nat. Hist.* v.3,n.15,pp.413-438,1tf.,1pl.

——— 1890. The fossil insects of North America, with notes on some European species. Vol. I. The pre-Tertiary Insects. MacMillan and Company: New York. 455pp.,35pl.

Sellards, E.H. 1903. Some new structural characters of Paleozoic cockroaches. *Am. J. Sci.* ser.4,v.15,n.80, pp.307-315,2pl.

——— 1904a. A study of the structure of Paleozoic cockroaches, with descriptions of new forms from the coal measures. *Am. J. Sci.* ser.4,v.18,n.104, pp.113-134,25tf.,1pl.

——— 1904b. A study of the structure of Paleozoic cockroaches, with descriptions of new forms from the coal measures. *Am. J. Sci.* ser.4,v.18,n.105, figs. 26-37, 1pl.

——— 1908. Cockroaches of the Kansas coal measures and of the Kansas Permian. *Kansas Geol. Surv. (Rpt.)* v.9,ch.11, pp.501-570,14pl.

——— 1909. Types of Permian insects. Pt. III. Megasecoptera, Oryctoblattinidae and Protorthoptera. *Am. J. Sci.* ser.5,v.27,n.158,pp.151-173,22tf.

Tillyard, R.J. 1923. The wing-venation of the Order Plectoptera or mayflies. *J. Linn. Soc. London.* v.35,n.233, pp.143-162,10tf.

——— 1924a. Description of a new paleodictypterid. *In: Dunbar, C.O., Kansas Permian Insects.* Pt. I. The geologic occurrence and the environment of the insects. *Am. J. Sci.* ser.5,v.7,n.39, pp.203-207,4tf.,2pl.

——— 1924b. Kansas Permian Insects. Pt. 3. The new order Protohymenoptera. *Am. J. Sci.* ser.5,v.8,n.44, pp.111-122,5tf.,1pl.

——— 1925a. Kansas Permian Insects. Pt. 4. The order Paleodictyoptera. *Am. J. Sci.* ser.5,v.9,n.52, pp.328-335,3tf.

——— 1925b. Kansas Permian Insects. Pt. 5. The orders Protodonata and Odonata. *Am. J. Sci.* ser.5,v.10,n.55, pp.41-73,14tf.

-
- 1925c. Alleged rhaetic craneflies. *Nature* v.116,n.2923, pp.676-677,1tf.
- 1926a. Kansas Permian Insects. Pt. 6. Additions to the orders Protohymenoptera and Odonta. *Am. J. Sci.* ser.5,v.11,n.61, pp.58-73,9tf.
- 1926b. Kansas Permian Insects. Pt. 7. The order Mecoptera. *Am. J. Sci.* ser.5,v.11,n.62, pp.133-164,19tf.
- 1926c. Kansas Permian Insects. Pt. 8. The order Copeognatha. *Am. J. Sci.* ser.5,v.11,n.64, pp.315-349,19tf.
- 1926d. Kansas Permian Insects. Pt. 9. The order Hemiptera. *Am. J. Sci.* ser.5,v.11,n.65, pp.381-395,7tf.
- 1926e. The rhaetic "craneflies" from South America not Diptera but Homoptera. *Am. J. Sci.* ser.5,v.11,n.63, pp.265-272,4tf.
- 1928a. Kansas Permian Insects. Pt. 10. The new order Protoperlaria: A study of the typical genus *Lemmatophora* Sellards. *Am. J. Sci.* ser.5,v.16,n.93, pp.185-220,19tf.
- 1928b. Kansas Permian Insects. Pt. 11. Order Protoperlaria: Family Lemmatophoridae (continued). *Am. J. Sci.* ser.5,v.16,n.94, pp.313-348,22tf.
- 1928c. Kansas Permian Insects. Pt. 12. The family Delopteridae, with a discussion of its ordinal position. *Am. J. Sci.* ser.5,v.16,n.96, pp.469-484,11tf.
- 1928d. Kansas Permian Insects. Pt. 13. The new order Protelytroptera, with a discussion of its relationships. *Am. J. Sci.* ser.5,v.21,n.123, pp.232-266,18tf.
- 1932a. Kansas Permian Insects. Pt. 14. The new order Neuroptera. *Am. J. Sci.* ser.5,v.23,n.133, pp.1-30,12tf.
- 1932b. Kansas Permian Insects. Pt. 15. The new order Plecoptera. *Am. J. Sci.* ser.5,v.23,n.134, pp.97-134,237-272,22tf.
- 1936. Kansas Permian Insects. Pt. 16. The order Plecoptera (continued): The family Doteridae, with a note on the affinities of the order Protohymenoptera. *Am. J. Sci.* ser.5,v.32,n.192, pp.435-453,4tf.
- 1937a. Kansas Permian Insects. Pt. 17. The order Megasecoptera and additions to the Palaeodictyoptera, Odonata, Protoperlaria, Copeognatha and Neuroptera. *Am. J. Sci.* ser.5,v.33,n.194, pp.81-110,10tf.
- 1937b. Kansas Permian Insects. Pt. 18. The order Embiaria. *Am. J. Sci.* ser.5,v.33,n.196, pp.241-251,3tf.
- 1937c. Kansas Permian Insects. Pt. 19. The order Protoperlaria (continued): The family Probnisidae. *Am. J. Sci.* ser.5,v.33,n.198, pp.401-425,10tf.
- 1937d. Kansas Permian Insects. Pt. 20. The cockroaches, or Blattaria, Pt. I. *Am. J. Sci.* ser.5,v.34,n.201, pp.169-202,17tf.
- 1937e. Kansas Permian Insects. Pt. 20. The cockroaches, or Blattaria, Pt. II. *Am. J. Sci.* ser.5,v.34,n.202, pp.249-276,11tf.
- Wheeler, W.M.** 1906. Brief reports from returned expeditions. I. The expedition to Colorado for fossil insects. *Am. Mus. J.* v.6,n.4, pp.199-203,5tf.
- Wickham, H.F.** 1908. New Fossil Elateridae from Florissant. *Am. J. Sci.* ser.4,v.26,n.151, pp.76-78,3tf.
- 1909. New Fossil Coleoptera from Florissant. *Am. J. Sci.* ser.4,v.28,n.164, pp.126-130.
- 1910. New fossil Coleoptera from Florissant, with notes on some already described. *Am. J. Sci.* ser.4,v.29,n.169, pp.47-51.
- 1912. A report on some recent collections of fossil Coleoptera from the Miocene shales of Florissant. *Bull. Iowa St. Univ. Lab. Nat. Hist.* v.6,n.3, pp.3-38,8pl.
- 1916. The fossil Elateridae of Florissant. *Bull. Mus. Comp. Zool. Harvard Univ.* v.60,n.12, pp.491-527,7pl.
- Wieland, G.R.** 1925. Rhaetic craneflies from South America. *Am. J. Sci.* ser.5,v.9,n.49, pp.21-28,2tf.,1pl.
-

——— 1926. South American fossil insect discovery. *Am. J. Sci.* ser.5,v.12,n.68,
pp.130-135,2tf.

The Author

Russell D. White. Division of Invertebrate
Paleontology, Peabody Museum of Natural
History, Yale University, New Haven, CT
06520-8118.

RESEARCH LIBRARIAN

JUN 15 1996